PB84-127166

Environmental Management Report, FY 1983

(U.S.) Environmental Protection Agency
Philadelphia, PA

May 83

U.S. Department of Commerce
National Technical Information Service
NTIS

TECHNICAL REPORT DATA

(Please read Instructions on the reverse before completing)

1. REPORT NO.
N/A

2.

3. RECIPIENT'S ACCESSION NO.
PB84 127166

4. TITLE AND SUBTITLE
Environmental Management Report

5. REPORT DATE
May 1983

6. PERFORMING ORGANIZATION CODE

7. AUTHOR(S)

8. PERFORMING ORGANIZATION REPORT NO.

9. PERFORMING ORGANIZATION NAME AND ADDRESS
US Environmental Protection Agency Region 3
Sixth & Walnut Sts.
Philadelphia, PA 19106

10. PROGRAM ELEMENT NO.

11. CONTRACT/GRANT NO.

12. SPONSORING AGENCY NAME AND ADDRESS
Same

13. TYPE OF REPORT AND PERIOD COVERED

14. SPONSORING AGENCY CODE

15. SUPPLEMENTARY NOTES
COLOR ILLUSTRATIONS REPRODUCED IN BLACK AND WHITE

16. ABSTRACT

This report describes the environmental problems found in Region 3, which includes Delaware, Maryland, Pennsylvania, Virginia, West Virginia and the District of Columbia. The most significant Regional problems include hazardous waste dump and disposal sites, the siting of new hazardous waste facilities, ozone and SO_2 air pollution, surface water contamination by acid mine drainage and non-point sources, PCB contamination incidents, persistant violations with small water supplies and potential groundwater contamination.

17. KEY WORDS AND DOCUMENT ANALYSIS

a. DESCRIPTORS

hazardous waste
ozone
sulfur dioxide
acid mine water
nonpoint pollution
PCB's
ground water

Delaware
Maryland
Pennsylvania
Virginia
West Virginia
District of Columbia

b. IDENTIFIERS/OPEN ENDED TERMS

c. COSATI Field/Group
48B
680

18. DISTRIBUTION STATEMENT
Distribution unlimited

19. SECURITY CLASS *(This Report)*
N/A

20. SECURITY CLASS *(This page)*
N/A

21. NO. OF PAGES

22. PRICE

EPA Form 2220-1 (9-73)

United States
Environmental Protection
Agency

Regional Administrator

Region 3
Sixth and Walnut Streets
Philadelphia, PA 19106

May 1983

Delaware, District of Columbia,
Maryland, Pennsylvania,
Virginia, West Virginia

PB84-127166

EPA

Environmental Management Report

1983

REPRODUCED BY
NATIONAL TECHNICAL
INFORMATION SERVICE
U.S. DEPARTMENT OF COMMERCE
SPRINGFIELD, VA. 22161

EPA REGION III

ENVIRONMENTAL MANAGEMENT REPORT

FY 1983

TABLE OF CONTENTS

Page

Part 1 Executive Summary 1

Part 2 Discussion of Significant Environmental Problems and Implications for Agency Management

Air Quality Problem 18

Surface Water Quality Problems 31

Ocean Problems 45

Drinking Water Problems 50

Ground water Problems 53

Hazardous Waste Problems

RCRA Problems 60
Superfund Problems 75

Pesticide Problems 79

Radiation Problems 80

Federal Facilities 88

Appendix A. Supporting Documentation

Air Quality Problems .... A- 1

Surface Water Quality Problems A-25

Ocean Problems A-44

Drinking Water Problems A-51

Ground water Problems A-55

Hazardous Waste Problems

RCRA Problems A-61
Superfund Problems A-67

Pesticides Problems A-75

Appendix B. Detailed Analyses of Selected Regional Problems

Violations of Ozone Standards .... B- 1

Surface Water Pollution by Acid Mine Drainage B-20

Non-Point Source Pollution by Nutrients and Sediments from agriculture B-25

The Development of a Regional Ground water Data Base B-32

Part 1.

Executive Summary

Executive Summary

Introduction

This Environmental Management Report for the Middle Atlantic Region holds few surprises. Many of the environmental problems found in Delaware, Maryland, Pennsylvania, Virginia, West Virginia and the District of Columbia have been with us for many years. A summary of the environmental problems within Region III appear on the chart on page 2.

Region III is among the leading Regions in population density, manufacturing, mining, steel production, and chemical production. Each of these factors adds its own particular type of pollution problem. Thus, we are faced with air pollution problems from automobiles and industry; a significant number of streams degraded by acid mine drainage; and an undetermined amount of land, groundwater and surface water contaminated by toxic waste dumps and spills.

These problems tend to be most prevalent in certain areas within the Region. For example, the major cities of Philadelphia, Pittsburgh, Baltimore and Washington have most of the air pollution violations. The Chesapeake Bay is suffering from a variety of water pollution problems from point and non-point sources throughout its drainage area. Heavy transport of products, intermediates and raw materials by pipe lines, trucks, railroads and waterways results in a potential for major spills. This report outlines these problems in detail. Where the problems are well understood, the report suggests solutions. Where there are still many unknowns, the report suggests what further study is necessary before a solution can be developed.

SUMMARY OF ENVIRONMENTAL PROBLEMS

REGION III

	NUMBER OF COUNTIES TSP NONATTAINMENT	NUMBER OF COUNTIES SO$_2$ NONATTAINMENT	NUMBER OF COUNTIES CARBON MONOXIDE NONATTAINMENT	NUMBER OF OZONE PLANNING COUNTIES	MILES OF STREAMS* WITH IMPAIRED WATER QUALITY	PERCENT OF TOTAL REGIONAL MILES OF STREAMS WITH IMPAIRED WATER QUALITY	NUMBER OF LAKES WITH IMPAIRED WATER QUALITY	NUMBER OF POTENTIAL 301 (h) OCEAN DISCHARGE VARIANCE APPLICANTS	NUMBER OF WATER SUPPLY SYSTEMS WITH PERSISTENT VIOLATIONS	NUMBER OF DUMP SITES WITH POTENTIAL SIGNIFICANT GROUNDWATER PROBLEMS	NUMBER OF RCRA FACILITIES REQUIRING GROUNDWATER MONITORING	NUMBER OF DUMP SITES ON SUPERFUND NATIONAL PRIORITY LIST	NUMBER OF CONFIRMED PESTICIDE MIS-USE INCIDENTS
LAWARE	0	0	0	1	150	3%	18	3	5	4	3	8	5
STRICT OF LUMBIA	0	0	1	1	27	1%	0	0	0	0	0	0	1
RYLAND	1	0	1	9	600	10%	3	2	14	0	24	3	6
NNSYLVANIA	8	1	2	15	2,744	45%	12	3	185	8	88	30	17
RGINIA	0	0	1	0	1,024	17%	9	6	326	1	33	4	17
ST RGINIA	2	2	0	0	1,543	25%	0	0	141	2	20	4	4
GIONAL OTALS	11	3	5	26	6,088		42	14	671	15	168	49	50

*Does not include the Chesapeake Bay which has impaired water uses over some 1,200 square miles of it's surface area.

This report is organized by media. Problems within each media have normally been ranked (ranking methodology is presented in Appendix A). No attempt has been made to rank problems on an inter-media basis.

The basic intent of this report is to provide a significant new prespective which will give Agency and State planning and management activities, a clear environmental focus; thereby enhancing our ability to set and achieve environmental goals.

AIR

The major findings of this report with respect to the air media are as follows:

1. The overall air quality for most geographical areas of Region III, has either shown improvement or little change over the past three years.

2. The number of Standard Metropolitan Statistical Areas in Region III exceeding standards for particulates and ozone has decreased. Trends analysis based on the number of days the standards for these pollutants were violated for the period 1975 - 1981, show a clear downward trend. Existing State Implementation plans and federal regulations should allow for attainment of standards for these pollutants in most areas. The noteworthy exception is ozone in major urban areas, which will probably require further control to meet standards.

3. Monitoring results for carbon monoxide show no clearly defined trend. We believe this can be largely attributed to monitoring stations being moved in an effort to obtain more meaningful measurements. Nevertheless, attainment of the CO standard in all areas is expected under current regulations.

4. Two counties in Region III still violate the sulfur dioxide standard. These are Allegheny County, Pennsylvania (Pittsburgh area) and Hancock County, West Virginia (West of Pittsburgh). It is not immediately clear which sources are the cause of these violations or exactly what needs to be done to remedy them.

5. Airborne toxic pollutants have become a major public concern in some areas. However, data is lacking to determine if there is a problem and its extent. Although a number of studies have been completed and others are underway, a number of problems exists relative to data collection methodology and data interpretation.

6. Long range transport of pollutants, particularly sulfur dioxide and acid deposition are interrelated problems which are of major concern. Additional research, data collection and technical/legal manpower will be needed to address these problems.

7. Indoor air pollution is an issue of increasing concern to many residents of the Northeast. Although EPA does not have the regulatory authority to address this issue, our staff receives public requests for information on a regular basis. A mechanism for obtaining updated

information on indoor air pollution measurements and controls would be beneficial.

8. Planning and enforcement efforts have been slowed due to the incertainty of anticipated changes in the particulate standard. A decision regarding this new standard would help resolve these uncertainties.

9. About 86 percent of the public schools in the Region have complied with EPA's inspection requirement for asbestos containing materials. Private schools however, are not required to report and therefore, we are unsure of their compliance. We are concerned that schools which lack the funds for cleanup may not conduct the required inspections. In the absence of a mandatory federal cleanup requirement, we believe that cooperative agreements with the states are the best way to insure compliance. This will however, strain regional resources.

10. The economic recession has resulted in decreased levels of air pollution as factories and other sources cut their output. There exists a potential that an economic recovery may not include the appropriate levels of pollution control. Therefore, the Agency needs to be alert to any indication that this potential is materializing.

11. We expect that the PSD increment eventually will be consumed in one or more areas, thus stopping future major industrial construction. We believe there is a need to establish a tracking system which documents the use of the PSD increment. We also should develop Agency guidelines and policy for dealing with this situation.

12. The current division of responsibility between EPA's air program under the Clean Air Act and the Center for Disease Control is causing concern. The review of independent health-effects studies, resulting from activities outside our regulatory responsibility, leads to a delay in the release of information to the public. This has resulted in increased public worry and pressure on the agency. EPA needs to increase its internal ability to review health-effects studies and to release the information to the public.

SURFACE WATER

The major findings of this report with respect to surface water are as follows:

1. Surface water quality in EPA, Region III has seen significant improvement in the last decade. Dissolved oxygen (DO) levels have increased in the Potomac River (near Washington, DC), the Delaware River (near Philadelphia, PA), the Kanawha River (near Charleston, WVA), and the Monongahela River (near Pittsburgh, PA). Most of the progress has been due to the upgrading of municipal and industrial waste treatment facilities. The Monongahela River has also seen significant progress in correcting pH problems (through the treatment of coal mining discharges) and lower cyanide and phenol levels (due to improved waste treatment and decreased production of the steel industry). Numerous other examples of localized improvement are documented.

2. Despite these advances, an estimated 6,456 miles of streams in Region III still cannot meet planned uses because of a variety of pollutants.

3. The major sources and problems are: acid mine drainage from coal mines; toxic discharges from industry; nutrients and sediments from agricultural runoff; nutrients from municipal wastewater treatment plants; lowering of dissolved oxygen levels due to municipal discharges and industrial; and high bacteria levels from a combination of municipal waste, industrial discharges, combined sewer overflows, agricultural and urban runoff, and on-lot sewage disposal.

4. Acid mine drainage is by far the major cause of use impaired streams in the Region, accounting for an estimated 49 percent of the use impaired streams. Attempts to solve the problem, particularly with abandoned mines, have met with minimal success. Reliable technology for mitigating the problem has been slow in developing, there is little or no public funding to develop the technical solutions and to apply them. Further, it is often impossible to locate private responsible parties to undertake cleanup. More research on cleanup technologies as well as better mechanisms to require mine operators to deal with the problem are needed to meet stream standards. It may also be necessary to further restrict mining in some areas where streams may be especially sensitive to acid drainage, unless long term control measures can be effected.

5. There is a general lack of data concerning the prevalence and health effects of many toxic pollutants from industry. However, the data that is available raises some concerns. Toxics have been found in an estimated 16 percent of use impaired streams in Region III and in some cases could represent the greatest threat to public health of all water quality problems. An aggressive program of bio-monitoring should be

undertaken in order to obtain a better data base and make "before" and "after" determinations of impact on aquatic life. More resources are needed to accomplish a better program. The completion of BAT guidelines for toxics related industries will also be a major step in improving this problem.

6. Non-point source runoff from agricultural activities adds to the nutrient burden of nitrogen and phosphorous in many streams and lakes and are responsible for excessive algal growths. Large quantities of sediments also run off from farming activities. Best Management Practices (MBP) can control these problems, but to date, farmers have had little economic incentive to use them. EPA should work with other federal agencies and the States to encourage the use of BMPs through educational programs and other means to stimulate controls in priority areas.

7. Point source discharges from municipal sewage treatment plants have contributed to nutrient loads in a number of lakes in the Region. Analysis is needed to determine where point source nutirent controls are necessary and cost effective. EPA should also develop a program to help permittees in the operation and maintenance of municipal nutrient control facilities.

8. Dissolved oxygen levels in a number of streams have been substantially reduced by the oxygen demand of waste from inadequate municipal sewage treatment plants. The States should direct future construction grants funding to communities whose present discharges cause water quality problems.

9. High bacteria levels are the most common water quality problem in Virginia, Delaware and the District of Columbia. Bacteria is easy to control if the source is known. Since the source of much bacterial contamination has not been documented in the Region, studies of this problem should be undertaken by the States.

OCEANS

The major findings of this report with respect to the oceans are as follows:

1. The overall condition of the coastal waters and the marine environment within Region III are considered good. However, ocean dumping, ocean discharges and oil and gas drilling are potential point source threats to ocean water quality. Lowered dissolved oxygen levels in the oceans are also caused by the entry of organic materials through non-point sources of pollution.

2. No ocean dumping is presently taking place in Region III waters, although an ocean incineration site, a sludge dumping site,and a dredged site are proposed. Extensive monitoring programs are proposed for these sites.

3. There is only one large sewage treatment plant presently discharging into the ocean. This plant, at Ocean City, Maryland, appears to be causing no harm to ocean quality. Section 301(h) of the Clean Water Act allows some modification to the secondary treatment requirement for publicly owned treatment works (POTW) discharging into "marine waters."

4. Oil and gas drilling in the oceans present a potential hazard through accidental spills and the discharge of drilling muds. Spills are regulated by the Coast Guard. EPA has proposed to control drilling muds through the use of a general permit for all drilling platforms located in the Outer Continental Shelf. Although no commercial drilling is presently taking place, the potential is there and will probably eventually transpire.

5. A number of fish kills have occurred offshore due to lowered dissolved oxygen levels. These events are thought to be due to phytoplankton growth caused by naturally occurring nutrients and nutrient plumes from major estuaries such as the Chesapeake and Delaware. Of future concern to ocean water quality is the disposal of dredged spoils, the disposal of sewage sludge, potential large oil or hazardous waste spills from tankers or offshore drilling, and the possible effects of ocean discharges by POTWs. Further studies and close surveillance of these activities will be required, however, present resources are inadequate to accomplish this to the desired level.

DRINKING WATER

State and EPA implementation of the Safe Drinking Water Act has revealed several important problems. These are: compliance violations by small systems, response to unregulated contaminants, Pennsylvania primacy, and water quality issues. The highest priority has been placed on small system compliance. According to the latest inventory, 5,272 of the 5,854 community water systems in Region III are small systems serving less than 3,300 people each. Although small systems supply only 9.1 percent of the total population served by community systems, approximately 98 percent of the persistent violations of drinking water standards occur in small systems. These violations involve failure to meet monitoring and reporting requirements or failure to meet drinking water quality standards. A financial study indicates that many of these systems have serious financial and/or operating problems.

GROUNDWATER

EPA's data on groundwater contamination is based primarily on reported incidences of contamination plus a review of the groundwater quality near hazardous waste disposal sites slated for cleanup under Superfund. The data is far from complete because there is little information on recharge areas, water quality from private wells, or possible contamination by active hazardous waste sites. There is also a lack of complete geohydrological data for all areas in the Region.

The principal sources of groundwater contamination are industrial waste disposal facilities, agricultural wastes, on-lot waste disposal, oil and gas exploration, mining, and salt water intrusion. Many of the health-related concerns are attributable to the presence of volatile organic chemicals such as trichloroethylene (TCE) and perchloroethylene (PCE). These contaminants are typically associated with a variety of commercial/industrial activities. More information needs to be gathered on the location of drinking water sources, the aquifers they use and area geology in order to determine how best to protect these supplies from future contamination.

HAZARDOUS WASTE - RCRA

The major findings of this report with respect to RCRA are as follows:

1. A total of 7,556 hazardous waste activities have been reported in Region III. Of this total, 952 facilities have been identified which require RCRA permits for the treatment, storage or disposal of wastes. Although there is a general lack of data concerning the amount of hazardous waste being handled and incomplete inspection of waste handlers, several problem areas have been uncovered. These are groundwater contamination, siting of hazardous waste facilities, the disposal of hazardous wastes in sanitary landfills, and the illegal disposal of hazardous wastes.

2. Groundwater contamination occurs most frequently from surface impoundments, landfills, and land use practices. We must identify and correct these problems as soon as possible.

3. Siting of hazardous waste facilities will be a continuing problem with a high level of public opposition. The failure to approve new sites is widening the gap between the volumes of waste generated and the capacity of storage, treatment of disposal facilities. EPA must promote close cooperation among state and local governments, industry, and the public to resolve this situation.

4. The present small generator exemption and the allowing of small quantities of hazardous waste to be disposed of in sanitary landfills has the potential of creating situations that could endanger public health. The current regulations should be revised to eliminate this possibility.

5. RCRA requirements alone cannot prevent "midnight dumping" of hazardous wastes. The problem can be solved only through a coordinated effort between federal, state, and local law enforcement and environmental agencies.

HAZARDOUS WASTE - SUPERFUND

Emergency actions are taken when there exists an eminent danger to public health. These acctions can range from securing the site to actual removal of the hazardous material.

Remedial cleanup of hazardous waste sites is based on a priority ranking using the Hazard Ranking System (HRS). The HRS is a good system for evaluating sites, but it does have some shortcomings. Not all potential sites have been investigated, nor has the HRS been applied to all sites that have. Thus there will be new sites which will be added to the National Priority List, thereby shifting priorities.

Another major problem concerns the inability of some states to provide the required 10 percent share of costs for a detailed survey and/or cleanup of a site. Unless the states develop better mechanisms for securing their share of the costs, cleanups will be delayed.

PESTICIDES

Most pesticide problems are related to improper use by pesticide applicators. Most pesticide applications take place in residential areas rather than in agricultural areas. Commercial pest control operators working in homes are responsible for the majority of proven pesticide mis-use incidents which may cause harm to man or the environment. Although some form of state enforcement action is taken in all proven mis-use incidents, more efforts are being made to address the mis-use by commercial pest control operators.

RADIATION

The radiation program in Region III has as its prime responsibility the review of State and County emergency plans for nuclear power plants.

There are eight nuclear power plants in Region III and one in Region II for which the 10-mile planning zone extends into Region III. Five State plans and twenty-eight County plans are being developed which must be reviewed by the Region III radiation program. In addition, each plan must be exercised in a full-scale drill at least annually, leading to nine annual exercises which are attended by the Regional Radiation Representative.

The Canonsburg inactive uranium mill tailings site is located in Region III. Remedial actions at this site will be performed by the Department of Energy over the next couple of years. The Region has reviewed the draft EIS for site cleanup, will review the final EIS, and will keep abreast of the remedial actions.

FEDERAL FACILITIES

Based on GSA inventory records, there are 2,214 Federal Facilities in EPA, Region III. These facilities encompass some four and a half million acres of land.

Pollution abatement projects are presently being carried out at 503 of these facilities.

There are 144 federal facilities which are major air contributing sources (100 ton per year potential), of which five are known to be out of compliance. Each of these five sources are operating under an acceptable abatement schedule.

There are presently 256 NPDES applications on file of which some 32 percent are out-of-compliance. Many of these are operating with expired permits. Compliance rates have increased in recent years.

Presently 36 federal facilities have submitted Part "A" RCRA applications.

In accordance with Executive Order 12316, EPA will play an advisory role to the Department of Defense in the investigation, study and clean-up of Superfund sites for federal facilities.

REGIONAL SUMMARY

The following table summarizes the Environmental problems in Region III.

The most significant Regional problems include hazardous waste dump and disposal sites, the siting of new hazardous waste facilities, ozone and SO_2 air pollution, surface water contamination by acid mine drainage and non-point sources, PCB contamination incidents, persistent violations with small water supplies and significant potential groundwater contamination.

The following four regional problems were chosen for more detailed analyses of the problem and probable solution(s). These analyses are contained in Appendix B.

a. Violations of ozone standards
b. Surface water pollution by acid mine drainage
c. Non-point source pollution by nutrients and sediments from agriculture
d. The Development of a regional ground water data base.

Part 2.

Discussion of Environmental Problems

Introductions

Part 2 is a media-by-media discussion of significant environmental problems and implications for agency management.

AIR QUALITY PROBLEMS

1. Environmental problem

TSP Standards Violations in Steel-Producing Areas (Priority 1)

a. The problem

The primary NAAQS for Total Suspended Particulate was exceeded in 1980 and/or 1981 in Baltimore City and Baltimore County, MD, in Allegheny County, Beaver County, Chester County and Westmoreland County, PA and Brooke County and Ohio County, WV.

b. Cause of the problem

All of these are steel-producing areas with various levels of non-compliance from steel making as well as many other sources of particulate matter which tend to cluster around steel-making operations. SIP Planning to actively remedy these ambient violations has been on a back burner for several years, since the announcement that a new particulate standard is imminent, and the change in emission levels that has resulted from the imposition of RACT and as a consequence of the slow economy. However, there is an increasing level of activity to substitute control over fugitive and roadway dust in lieu of control over process emissions. Process emissions tend to be of small size while road dust is generally somewhat larger because road dust consists of both particles which have fallen on the road and particles originating from the road itself. Suspended roadway dust tends to be larger in size than process emissions. The trades are less than ideal in terms of small particles and the future attainment status of these areas will depend on the new standards established. Very little progress on these problems is expected until the new particulate standard is promulgated. Should a marked improvement in the steel making economy occur, it is likely that particulate levels in these areas would worsen markedly.

c. Regional significance

This problem is significant but not unique to Region III because of the number of steel plants in the Region. In addition, non-attainment of the TSP standard beyond the statutory non-attainment date could be of great significance to the Region due to the potential for curtailed growth and the possible impact on Federally-funded projects.

d. Trends

TSP levels have shown a general downward trend in these areas since the mid 1970's, coincidental with a general economic downturn in the steel industry in the Northeast. The TSP standard continues to be violated despite the reduced level of steel-making activity. The downward trend in TSP levels may or may not continue depending on the individual circumstances of the areas involved. In this case, trends are not a reliable prediction of future events due to the potential for economic improvement.

2. Barriers to solution of the problem

One of the principal barriers to solution has been the delay in promulgating a size-specific particulate standard. During the 1979 SIP revisions, major strengthening of TSP regulations was not required because a new particulate standard was thought to be imminent at the time. Instead, RACT measures are all that EPA required. In addition, many previously negotiated consent decrees requiring emission reductions at steel plants are being renegotiated under the bubble policy. Under the TSP standard, road dust controls may be traded for conventional source controls despite differences in particle size and potential for health significance. Until promulgation of the size-specific standard, resolution of this problem is unlikely.

3. Management implications

a. Regional Actions

(1) EPA

Region III must continue to enforce the regulations that are now in effect. This will mean a continuation of past policies unless new directions are received.

(2) States

Region III states continue to wait for a size-specific particulte standard. It is also not realistic to expect states to oppose emission trades in an industry which is as economically depressed as the steel industry.

b. EPA Headquarters actions

Actions by EPA Headquarters have not yet begun to remedy the problem. As mentioned above, the long-awaited size-specific particulate standard has prevented additional SIP measures in non-attainment areas.

4. Anticipated results

Until EPA promulgates the new standard, the current situation will most likely continue.

1. Environmental problem

Ozone Non-Attainment (Priority 1)

a. The problem

The ozone standard is not being attained over large areas of Region III, principally in the northeast corridor and near Pittsburgh.

b. Cause of the problem

In most cases, attainment of the standard is predicted by 1987 within the error of the available models. This result is primarily due to the Federal Motor Vehicle Control Program and controls over stationary sources of hydrocarbons. While modeling may forecast attainment by 1987, there is sufficient uncertainty that attainment cannot be said to be assured.

c. Regional significance

It is necessary that a close watch be kept on reductions in ozone concentrations between now and 1987 to verify that the controls as implemented achieve the ozone reductions predicted by models. In addition, certain control measures (I & M in Pennsylvania) were late in being accepted. In this circumstance, further Federal sanctions if any must be carefully weighed to prevent loss of other, perhaps more desirable, programs. An effort should be made to establish an acceptable program to allow EPA to administer the Air program in an optimum manner.

d. Trends

The general trend in ozone levels in Region III has been a gradual reduction in violations over the years. It is difficult to accurately assess the trend because of changes in monitoring methods and station locations over the years. The inclusion of new stations in "rural" areas has tended to increase the observed number of violation - days in some cases where the trend at a given monitor would be downward. An attempt has been made to currect this effect in the graphic presentation later in this report.

2. Barriers to solution of the problem

Since the problem is simply to assure attainment of the ozone standard by 1987, the only barriers to solution of the problem are events which may cause the standard not to be attained. These might include failure of states or municipalities to implement required control measures (such as I/M for motor vehicles), unplanned increases of emissions which might result from (for example) shut-down of a major public transit system, or failure of reductions in emissions to achieve modeled ozone reductions.

3. Management implications

a. Regional actions

(1) EPA

Required submissions from states include ambient air quality data and data on reasonable further progress (RFP) toward attainment. The region will review these submissions and compare emission reductions achieved with those projected to be achieved. It will also be possible to utilize the planning models to predict the resultant ozone levels from reductions achieved. A comparison with measured ozone levels will determine whether ozone reductions predicted by the models are actually occurring.

(2) States

In addition to their major role in implementing control measures, the states are required to submit RFP reports and ambient data to EPA which will be the basis for the above analysis.

b. EPA Headquarters actions

In addition to its regulatory overview role, EPA Headquarters will need to support the regional analysis of progress toward the ozone standard. In the event that modeled reductions are not accurately reflected in measured ozone concentrations, more sophisticated models will need to be made available to attempt to refine the analysis. It may also be necessary to apply the Regional Model to better assess the incoming ozone and precursor concentrations that might interfere with attainment. If modeled ozone reductions do not occur, a major re-planning effort might be indicated using far more sophisticated models than the EKMA which was used for the 1982 SIPs.

4. Anticipated results

If all the models are reasonably accurate, the anticipated emission reductions should occur and the ozone standard should be attained.

1. Environmental problem

SO_2 Primary Non-Attainment in Allegheny County, PA (Priority 1)

a. The problem

Allegheny County, PA shows SO_2 primary non-attainment in 1980-81. A single monitor, Hazelwood, shows annual averages of 139 and 118 ug/m^3 during these years respectively. There are also modeled violations of the standard at other locations in the county.

b. Cause of the problem

The monitored violations appear to be due to an inoperative sulfur recovery unit at J & L steel, and so should be controllable by bringing the control device into operation. However, there are also modeled violations of the SO_2 standards throughout the county which are not reflected in the monitored data, probably because monitors can only be located at a finite number of fixed points. In this case, the violations appear to be due to a large number of sources both inside and outside the county, most of which are already tightly controlled.

c. Regional significance

If the primary SO_2 standard is not attained by the statutory deadline, the Region would be forced to assess the situation. Potential actions include additional SIP planning for the area-wide problem and source-specific actions for the monitored violation.

d. Trends

Since the monitored violation at Hazlewood is due to an inoperative piece of control equipment, attainment at that monitor can be expected when the equipment is returned to service. The modeled violations elsewhere are expected to persist and must be verified using ambient monitors.

2. Barriers to solution of the problem

For the source-specific violation, the only barriers are the engineering constraints in getting the sulfur recovery unit on line. For the area-wide problem, there is a lack of further reductions in SO_2 which may be readily obtained within Allegeheny County. If the monitoring proves the problem to be real, emission reductions will need to be obtained from outside the immediate area, perhaps including sources in other states.

3. Management implications

a. Regional actions - EPA and State

The remedy to this problem is not immediately apparent and so the Allegheny County Health Department and EPA are now conducting an analysis of the problem. Potential solutions include reductions in both distant and local sources of SO_2. The study also includes some validation of the model results.

b. EPA Headquarters action

If interstate emission reductions are required, these may extend into Ohio which is in another EPA Region. If interstate transport is involved, there will also be new policy questions to resolve.

4. Anticipated Results

It is possible that the study now being conducted will show attainment. If the models are proved correct, however, it will probably be necessary to require interstate emission reductions to achieve the standard.

1. Environmental problem

Airborne Toxic Substances (Priority 2)

a. The problem

In spite of the lack of standards on these substances (except vinyl chloride), there is substantial public interest in ambient levels of toxic substances. As a result of the high level of public interest, the regional office must deal with these problems despite limited regulatory authority or program funding.

b. Cause of the problem

It is sometimes the high level of public interest which generates the workload for the Regional Office in addition to the toxic substance itself or its health effect, though in some cases the hazard may be immediate; each case therefore must be dealt with as a potentially serious health problem.

c. Regional significance

In Morgantown, WV, a study of organics adsorbed on particulate matter has yielded a positive Ames response. The original work done by a NIOSH laboratory is now being expanded into a cooperative EPA/NIOSH study coordinated by the Regional Office.

In response to a request by the City of Philadelphia, funding was provided for purchase of instrumentation and a study of ambient toxic organics in the city. Philadelphia is also a leader in registration of toxic substances under its "Right-to-Know" law. Funding has also been provided recently to the Commonwealth of Pennsylvania to plan, develop and implement a comprehensive air toxics program taking into consideration critical substances, emissions control techniques, health and inter-media effects. In addition, several EPA studies are also under way in Philadelphia including the Integrated Environmental Management Program and an experimental study of various sampling and analyses techniques by the Environmental Monitoring Support Lab (EMSL) in North Carolina.

In the past, Region III has conducted a study of toxic organics in Charleston, WV and routinely receives inquiries from citizens and elected officials on the study.

As the RCRA permit process moves forward, closer integration of regional resources is taking place in order to prevent subsequent harmful emissions of air toxics from transport, destruction or storage facilities of hazardous waste materials.

d. Trends

Toxic organics may be classified as a perceived environmental problem in spite of the lack of standards including long-term low-level exposure and its effects. In order to properly handle this problem, it will be necessary for Region III to continue to devote resources and to receive support from various headquarters and laboratory groups that have provided help in the past.

2. Barriers to solution of the problem

Barriers include the difficulty in measuring toxic air pollutants, the absence of ambient or emission standards, the difficulty in achieving emission reductions for non-regulated pollutants and the tendency of some persons and organizations to "sensationalize" the problem.

3. Management implications

Regional actions

(1) EPA

The Regional Office must continue to devote resources to toxic air pollutant programs, expanding them as necessary in order to protect the public from real health threats and to address perceived threats. The alternative would be a public perception of an agency which is not protecting public health.

(2) States

Most State air agencies must respond to toxic air pollutants because of public demands. Typically, problems are passed on to EPA, but a strong public outcry will result in individual State regulations. The resultant non-uniformity could become a problem to industry.

b. EPA Headquarters actions

In the past, the Region has received support from various Headquarters components to deal with toxic air pollutant problems. This support should continue. However, the absence of an agency air toxics policy has hampered initiatives of some states, particularly those with underdeveloped or non-existent programs.

4. Anticipated results

A reduction in real or perceived threats to public health is the ultimate goal of our actions in toxic air pollutants. Individual problems must be dealt with on an individual basis. If a specific problem occurs frequently, it may be desirable to deal with it on a generic basis.

5. ADDITIONAL ISSUES WORTHY OF DISCUSSION

The following issues are not prioritized, but are felt to be important to discuss:

Indoor Air Pollution

During a large part of the year in the Northeastern United States, people spend most of their time indoors with the windows closed. Under these conditions, their exposure to air pollutants is very different from outdoor levels. Measurements show that indoor sulfur dioxide levels are generally lower than outdoors (except where kerosene heaters are used) while carbon monoxide and nitrogen dioxide levels tend to be higher where gas is used for cooking. When a smoker is in the room, particulate levels often exceed the criteria for various alert stages. In addition, indoor air often contains substances which are not encountered in significant quantities outdoors. Examples of these substances are formaldehyde from insulation and construction materials, radon gas from uranium-bearing soils, solvents from various paints, paint removers, fabric sizing and adhesives from carpeting, etc. Many of these substances are potentially as hazardous as normal outdoor pollutants - for example formaldehyde and methylene chloride (used in household paint removers) are suspect carcinogens. Kerosene heaters are a difficult problem to deal with because of the role played by the choice of fuel in determining the health problem, and because their use is voluntary.

In the regional office, we routinely receive inquiries on the hazards of indoor air pollution. If we know of a specific hazard, we will direct the caller to a reliable source of information. While EPA does not regulate indoor air and does not envision any regulatory activity in the future, an understanding of population exposures and health effects is needed. First, to properly evaluate the epidemiological data used to set air quality standards, population exposure to indoor air pollutants needs to be accounted for. In addition, since EPA has a public health responsibility it seems proper that we should be able to inform the public of indoor hazards even if we do not intend to regulate them.

In order to provide this service, the regional office will need data on indoor air pollution and its hazards. Such data could be compiled at Headquarters and sent to all regions, saving much duplication of effort. Research on indoor air pollution should also be re-established.

Transition to Size-Specific Particulate Standard and Other Standard Changes

For several years it has been known that EPA would probably adopt a size-specific standard for particulate matter. The general impact of this knowledge has been a virtual halt in the planning process to achieve the TSP standard. Enforcement efforts have also been slowed by the uncertainty in the standard. The long delay in proposing the standard revision has caused this state of limbo to continue beyond the statutory attainment date. Even after the standard is promulgated, it will be several years before sufficient ambient data is available to re-enter an orderly planning process. The impact of this problem is especially severe in steel-producing areas.

Proposal and final promulgation of the revised particulate matter standard should be accomplished by headquarters on a priority basis. We have seen adequate guidance from headquarters on the transition, so additional guidance is not required. The guidance which we have seen is quite general and is based on the minimum of information that would be expected to be available to judge future attainment status of areas needing particulate control. The guidance should be kept flexible enough that we can use whatever data is available in the transition process. For example, if a study has been done that includes size-specific measurements, we should utilize these rather than assuming PM-10 will be some set fraction of TSP.

Acid Precipitation and Deposition

Acid precipitation appears to be affecting many lakes and streams in the Northeast United States, however it is not apparently an immediate threat to health. However, it certainly is a perceived problem on the part of the States and is definitely a political and international relations problem. We frequently receive requests for information on "acid rain" and generally refer the requstor to our library where we have a small reference collection on the subject.

Headquarters assistance is needed in the form of more and better literature for distribution on the subject which will present the evidence in a factual manner and that would not be misunderstood by the public. Recently, standard methods for measuring wet deposition have been established, however it is also apparent that there is no authoritative consensus on the trend in pH since the historical data has been gathered by many different methods. Each of these previously used methods should be compared with the reference method so that the data can be compared to yield trends, though these would only be best estimates due to poor quality assurance on some past measurements. In addition, even if there is no trend in precipitation pH, buffering agents underlying many watersheds may be depleting due to the constant acid loading from rainfall and dry deposition. Thus trends in surface and lake acidity may be as important as trends in precipitation acidity.

More research is needed to develop testing methodologies for dry deposition. Headquarter's assistance is needed to develop an overall strategy for acid precipitation and deposition which defines the data base that is needed to determine the significance of this potential problem. Given that piece of information, our states could better define their role in contributing to the data base. The overall strategy should also provide specific time frames in which critical regulatory decisions would be made. Our state of knowledge today and the time required to achieve an understanding of the problem sufficient to establish the need for regulation should be clearly laid out in a form understandable to the general public.

Asbestos-in-Schools Program

Starting in 1979, EPA conducted a voluntary program to assist schools in inspecting their buildings for asbestos containing materials. Region III took an active role in implementing the voluntary program by conducting training seminars for school personnel and by visiting schools with special problems. Approximately 20 percent of the public schools and 75 percent of the private schools were not inspected under the voluntary program. For this reason, EPA issued a regulation in May 1982 requiring all schools to be inspected by June 28, 1983.

Region III public school districts have inspected 86 percent of their scools and are well on the way to 100 percent compliance with the inspection regulation. Since there is no regulation mandating abatement action, it is left to school administrators, employees, and parents of students to see that asbestos materials are encapsulated, enclosed or removed. Of the schools inspected, 12 percent need corrective action. Many schools have little or no funds for correcting asbestos problems. The lack of an abatement regulation provides another obstacle in resolving the asbestos-in-school problem. Inspection and abatement in private schools is the biggest problem in Region III. Since schools are not required to report to EPA under the inspection regulation, it will be difficult for Region III to target those private schools that are not in compliance. Those that do inspect usually have no funds for correction of the problem.

Fourteen of the 100 largest Local Education Agencies (LEA) in the country are in Region III. According to the compliance strategy issued by Headquarters, the records of these 14 LEA's must be inspected. Since Region III resources for the asbestos program are limited, it is recommended that the Region enter into non-funded cooperative agreements with the States. The degree of State participation could range from establishing a tracking and reporting system of the asbestos-in-schools program to taking over the entire program. Even with State cooperative agreements, the Region's resources will probably be strained in providing assistance to those States with little resources of their own such as Pennsylvania and West Virginia.

Effect of Economic Recovery on Air Pollution

The present economic recession has hit especially hard at the older steel production facilities in the northeast, especially in the areas in the western part of Region III. Particulate levels have dropped recently and have generally tended to track the steel production levels in the vicinity of some steel mills. Our best guess is that an economic recovery would cause particulate levels to increase. This material is also generally in the small size range and so would probably also be a problem with a size-specific standard. Depending on the level selected for the new standard, some additional controls may be needed if an economic recovery takes place.

At the present time, useful input from headquarters on this problem would be some plant-specific economic forecasting which would assist us in forecasting future steel-producing activity. However, in view of the economic problems and high unemployment in these areas, a return to the concept of technology transfer (formerly part of R & D) may be appropriate both in helping with economic recovery and in controlling the pollution associated with that recovery.

Economic Growth and Energy Development

In spite of a marked slowdown in energy growth since the 1973 oil crisis, there is a continued trend toward increased energy production and economic growth. Much of this growth also replaces older facilities and is covered under New Source Performance Standards or the PSD requirement for BACT. Thus where growth causes replacement of existing facilities, pollution reductions may occur. On the other hand, except for certain industries like electric power where production facilities must be located somewhere near the demand, much of the growth is occurring in the sun belt while the existing facilities being replaced are in the northeast. Thus this current round of economic growth is actually one source of unemployment in older areas. Unfortunately, in some cases environmental laws are being blamed for loss of jobs.

While the trend to move south is not subject to regulation by EPA, the impact of environmental regulations should be of concern. Since we are required to perform economic impact analyses for many of our regulatory actions, this analysis could be extended to evaluate the overall effect of environmental regulations on the economy. EPA should publish this information in an easily-read format for consumption by the general public.

Consumption of the PSD Increment

Growth in itself is not a serious environmental problem due to the stringent requirements imposed on new facilities, however PSD policy currently allows the possibility of the entire available increment to be consumed by the first applicant(s) in any area. While this has not been a problem to date, we will arrive at a point where a new facility cannot be built because the increment has been fully consumed. When this happens, there will undoubtedly be some action taken against EPA. This will possibly prove embarrasing to the Agency in view of our almost complete lack of any increment tracking system. We therefore suggest that a computerized increment tracking system be established, possibly as a part of AEROS. Since the increment is a measure of air quality, it would make the most sense to associate it with the SAROAD system, though it also has many attributes closely associated with the NEDS data base. A third data base associated with these two seems appropriate.

Health Impact Studies

In several instances over the past few years, independent reseachers have conducted health-effect studies in our region which alleged excess cancer deaths, identified hazardous industries with direct health effects, and in some cases produced reports which caused unnecessary alarm on the part of people in the "affected area". Our current policy is to forward such studies to the Center for Disease Control in Atlanta since EPA's in-house source of expertise, the Epidemiology Branch in HERL, has been abolished. CDC generally takes several months to provide assistance, hence many people go through unnecessary worry. Often elected officials get involved because of the long response time which causes more work for the regional office. This is especially vexing since some of these "studies" are based on unsound scientific principals, hence the public is needlessly alarmed.

Since EPA still has many experts on staff who could help resolve these problems, it would be helpful if a first-cut responsibility for review of outside studies could be established within EPA. This would allow both a rapid response to citizen inquiries and would avoid sending obviously flawed work to CDC. At the minimum, where an expert is available to the Region, we should have authority to use him before going to the Center of Disease Control (CDC has assigned a liaison to the Region III office which has helped greatly).

SURFACE WATER QUALITY PROBLEMS

Introduction

The purpose of this report is to identify: 1) priority surface water quality problems of EPA Region III, 2) barriers to solutions of these problems and 3) their management implications. Water quality problems in EPA Region III are summarized in Figures 1 and 2. (For a detailed assessment of waterbody use impairment, see Appendix A). The methodology used to identify the priority water quality problems in Region III follows this introduction. Utilizing this methodology, these priority Source/Pollutant categories were identified:

Priority A:
- Coal Mining/pH, Iron, Sediment [1]
- Industry/Toxics (Inorganic and Organic) [2]
- Domestic Waste[3]/Nutrients
- Agriculture/Nutrients, Sediments
- Domestic Waste[3]/Dissolved Oxygen
- Point and Non-Point Sources/Bacteria

Priority B:
- Urban Runoff/Nutrients
- Spills/Oil, Hazardous Substances
- Oil and Gas Operations/Dissolved Solids, Sediment, Toxics
- Precipitation/pH
- Wetlands

In this section, solution barriers and management implications are proposed for Priority A problems. Due to their regional significance, Coal Mining/pH, Iron, Sediment and Agriculture/Nutrients, Sediments are analyzed in depth in Appendix B.

Oil and Gas Operations, Wetlands and Acid Precipitation have been identified as emerging problems which may, should current trends continue, become higher priority problems. These emerging problems should be monitored closely by EPA Region III.

Of particular regional significance are problems associated with the Chesapeake Bay, an estuary which supports a variety of important uses. Recent trends have shown a deterioration in water quality and decline in certain aquatic fin fish and shellfish species. It has been theorized that high levels of nitrogen and phosphorus may indirectly be responsible for the significant impacts on water use. The Chesapeake Bay is considered a high priority waterbody that fits into several of the generic priority categories identified above.

---

[1] Few priority waterbodies fall under this category. However, it has been included because of the Regional extent of the problem.

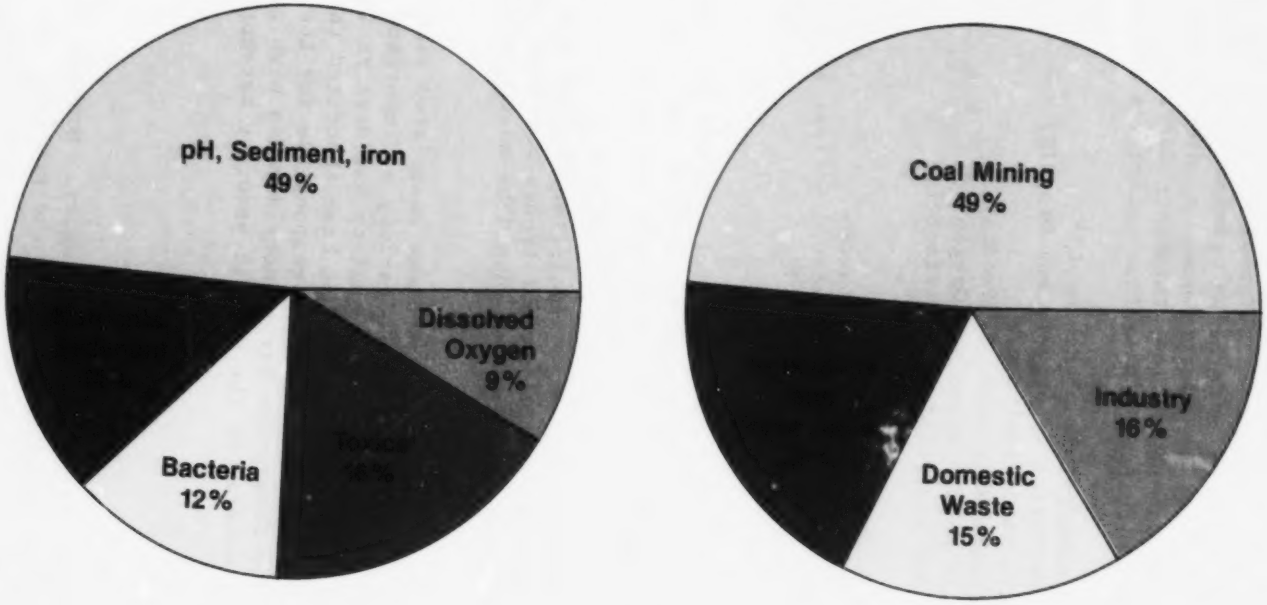
[2] This category does not include coal mining and oil and gas operations related toxics.

[3] Includes combined sewer overflows.

FIGURE 1

REGION III
USE IMPAIRED STREAMS

Estimated Total Miles: 6,456



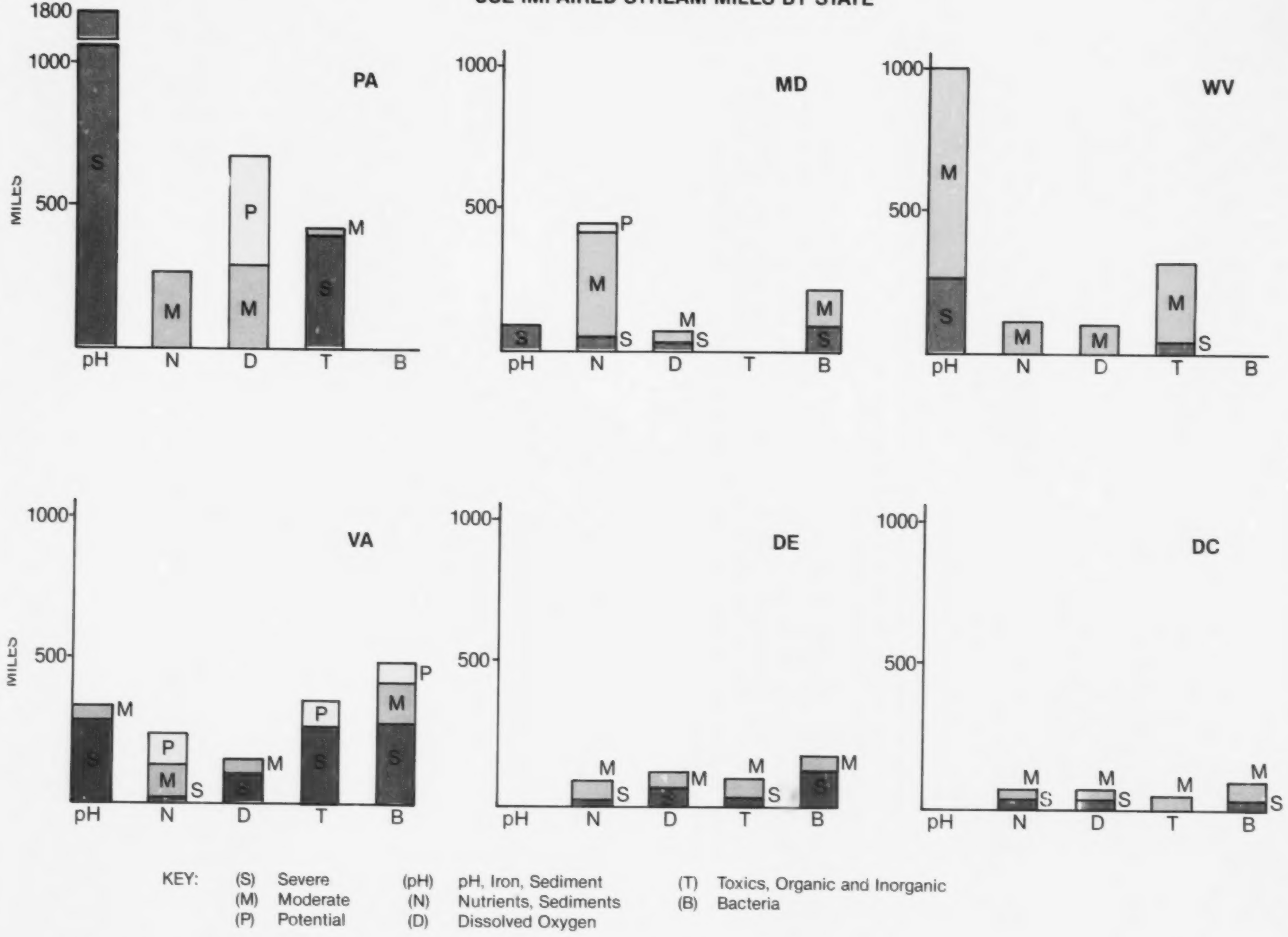
BY PROBLEM PARAMETER **BY SOURCE**

Note: Best professional judgment was used to estimate source contributions. Generalizations were made as to the source of some problems.

[1] Potential toxics problems have also been included in the category (potential problems have *not* been included in other categories).

FIGURE 2

USE IMPAIRED STREAM MILES BY STATE



Methodology for Determining Priority Problems

Priority water quality problems were determined by Region III staff in the following manner. All water bodies of impaired use were rated to determine their relative significance. The criteria for rating significance of a particular geographic water quality problem are contained in the ranking system (see Table 3 in Appendix A).

Utilizing this system, a group of waterbodies of highest rating were selected as being "representative" of the priority water quality problems in the region. (Note: These waterbodies are identified in the analyses to follow as "Regional Priority Waterbodies".)

The "Regional Priority Waterbodies" were then assessed to identify the categories of sources and pollutants which contributed to the use impairment. The resulting Source/Pollutant categories were segregated into Priority A and B, according to relative impact on the priority waterbodies.

As indicated, "Regional Priority Waterbodies" in this context are identified to facilitate determination of priority water quality problems in the region. These waterbodies represent examples of generic problems which occur throughout the region and do not represent a list of targets for EPA funding at this time. Such a list could only be developed subsequent to completion of State Section 305(b) Water Quality Inventories which address priority waterbodies.

DOMESTIC WASTE/NUTRIENTS

1. Description of Problem

- Sources: Point source discharge from municipal wastewater treatment plant. Nutrients of primary concern are nitrogen and phosphorus.
- Impaired Uses: Aquatic life, domestic water supply, recreation, aesthetics.
- Method of Impairment: Nitrogen and phosphorus promote excessive growths of algae, particularly in lakes and estuarine systems. Algae can cause large drops in dissolved oxygen (through respiration) which can be lethal to fish, imparts an offensive taste and odor to domestic water supplies, impairs boating and fishing, and is aesthetically offensive. Algae have also been linked to infections in humans through water contact recreation, causing gastrointestinal, respiratory and dermatalogical problems.
- Regional Significance: Often both municipal plants and agricultural runoff contribute to excessive nutrient levels. Domestic Waste/Nutrient dis-charges contribute to nutrient loads of 14% of the impaired stream miles and 25% of the impaired lakes in the Region.
- Trends: Generally, municipal discharges of nutrients have been or will be corrected where adequate local cost-sharing is available.
- Regional Priority Water Bodies: Loch Raven Reservoir (MD), Back River (MD), Patuxent River (MD), Green Lane Reservoir (PA), Neshaminy Creek (PA), Pymatuning Reservoir (PA).
- Documentation: For priority water bodies, sources and effects have been well documented. However, documentation for other advanced treatment funding is lacking in many cases due to inadequate definition of the relative contribution of point and non-point sources to total nutrient loads.
- Treatability: Phosphorus control is a relatively common practice in municipal wastewater treatment systems. Nitrogen control is technologically feasible, but use is less frequent due to cost considerations.

2. Barriers to Solutions

- Source Definition: Adequate documentation of point/non-point source loads will be necessary in many cases, especially where Advanced Treatment funding is desired.
- Operation & Maintenance: Where nutrient controls are constructed, operation and maintenance is often inadequate.
- Municipal Cost-Sharing: Some municipalities may have trouble absorbing their share of advanced treatment costs because of changes in federal funding policy.

3. Management Implications

- States: Review existing construction grants priority system for modifications which would attach higher priority to significant water quality problem areas. Assess current operation and maintenance programs and institute changes where necessary. Assure that NPS considerations are incorporated into AT development process.
- EPA Region III: Provide guidance to the States regarding 1) modification of their priority systems to emphasize mitigation of water quality impacts on streams, 2) operation and maintenance programs and 3) Incorporation of NPS considerations into AT review process.
- EPA - HQ: Develop a national program addressing operation and maintenance of municipal nutrient control facilities.

4. Anticipated Results

Implementation of recommendations would result in: 1) construction of advanced treatment facilities where they are most needed and 2) proper operation and maintenance of the facilities. Considering the high costs associated with advanced treatment, the benefits to be gained are self-evident.

INDUSTRY/TOXICS

1. Description of Problem

- Major Sources: Contamination is primarily industrial in nature and takes several forms: point source discharge, spills, stormwater runoff, impoundments, landfills and improper disposal, etc. (Note: This section does not address mine drainage or oil and gas drilling related substances.)

- Impaired Uses: Aquatic life, domestic water supply.

- Method of Impairment: Human consumption of water or fish contaminated with certain toxic substances represents a significant public health risk. Contamination of water by some substances can lead to taste and odor problems in public water supplies. Many toxic substances are harmful to fish and other aquatic organisms.

- Regional Significance: Toxics are responsible for an estimated 16% of the use impaired stream miles in Region III. Toxics are the greatest potential threat to public health of all water quality problems.

- Trends: Levels of certain toxic substances have decreased in recent years. For instance, PCB levels appear to have peaked in many areas and now show a downward trend. This is probably in part due to the comprehensive PCB control program currently in effect and is an indication of the benefits of toxics control. However, data is generally inadequate to identify trends regarding EPA's 129 Priority Pollutants. As more data becomes available, current problems should be better defined and additional problems are expected to emerge.

- Regional Priority Waterbodies: James River (VA), Allegheny River (PA), Schuylkill River (PA), Delaware River (PA), Ohio River (PA, WV).

- Documentation: Data is scarce for toxics concentrations in water column, sediments, fish flesh and finished drinking water (non-MCL parameters). EPA water quality criteria are available for 64 toxics for aquatic life and human consumption. However, data on health and ecological effects are incomplete and controversial because of lack of research. In summary, few conclusions can be drawn as to the extent and effects of contamination, except for site specific documentation on priority pollutants.

- Treatability: Technology is available (but costly) and includes aeration, chemical addition/settling, and carbon adsorption.

2. Barriers to Solutions

- Lack of Data: There is a serious lack of data and information on virtually all aspects of toxics including: 1) ambient water quality, 2) raw and finished drinking water, 3) fate of toxics, 4) effects of toxics on aquatic life and man, 5) contribution of non-point sources such as landfills and impoundments and 6) total number of toxic sites.

- Technology: Treatment methods are available to remove both organic and inorganic toxics. (Significant advancements in water quality have been experienced with the implementation of the technology based BPT controls.) However, the BAT Guidelines have not been fully utilized as toxics control method. In addition, monitoring detection limits are often not low enough to properly assess organic toxic levels. There are no approved disposal sites for PCBs in Region III.

3. Management Implications

- States:

  1. Agree to implement EPA biomonitoring policy (including tissue and toxicity studies) in State/EPA agreements

  2. Accelerate toxics monitoring of suspect public water supplies.

- EPA Region III:

  1. Commit to maintaining expertise in biomonitoring as it presently exists in the Environmental Services Division.

  2. Establish a biomonitoring coordinator in the Permits Branch/Water Division to provide assistance and guidance to States.

     Coordinators responsibilities would include:

     - Equitable and aggressive implementation of EPA's biomonitoring policy (when finalized).

     - When necessary, determine priorities in providing available Regional expertise.

     - Assure that results of biomonitoring are properly considered when the permit conditions are established.

     - Assure that State implementation of EPA's Biomonitoring Policy is included in the State/EPA agreements.

3. Select a priority waterbody and conduct several intensive surveys that are designed to provide data for development of an annual pollutant budget for appropriate toxics.
4. Establish local bio-data base linkage to the REACH file.
5. Operate an active PCB compliance monitoring program under the Toxics Substances Control Act and PCB regulations.
6. Work toward the establishment of a PCB approved disposal site in Region III.
7. Provide assistance to States in their development of a toxics monitoring program.

- EPA - HQ:

1. Finalize an aggressive policy for biomonitoring of effluents. The policy should consider assessment of acute, chronic, and bioaccumulation effects of toxics for resident fish species. The policy and supplemental guidance should also address important benthic species and primary producers.
2. Establish a national clearinghouse for collection and distribution of all biomonitoring data collected. This transfer of such data to other Regions could be very valuable in minimizing future data requirements.
3. Finalize BAT guidelines for toxics related industries. These guidelines should provide recommended permit limits or discuss the value of biomonitoring in determining effluent limits for that industry.
4. Establish criteria for safe fish tissue concentration for significant toxic pollutants.
5. Pursue additional resources for State monitoring through Section 106 grants.
6. Revise PCB enforcement strategy to increase the Agency's visibility in this program. One possible solution could be nation-wide industry seminars designed to educate those that handle PCB.
7. Provide additional resources for PCB monitoring in EPA.
8. Update and significantly expand the list of parameters with recommended maximum concentrations levels (MCL's) for drinking water.

9. Support research to lower the existing detection limits for significant toxic organics.

10. Support research to obtain conclusive data on epidemiological and toxicological effects, fate and distribution of toxic substances.

4. Anticipated Results

Implementing these recommendations should provide a better data base, evaluation methodologies and tools needed to adequately address priority pollutants. This type of program expansion is responsive to the growing media and public concerns over toxic pollutants.

DOMESTIC WASTE/DISSOLVED OXYGEN

1. Description of Problem

- Source: Municipal treatment plant discharges.
- Impaired Uses: Aquatic Life
- Method of Impairment: Decay of organic matter and ammonia from domestic wastewater causes substantial reductions in dissolved oxygen which may reduce fish reproduction or be lethal.
- Regional Significance: Low dissolved oxygen levels, primarily due to domestic waste, are responsible for an estimated 9% of the impaired stream miles in Region III. Although this problem may not be significant in terms of overall regional impact, it plays a vital role in the impact of the priority water bodies of Region III.
- Trends: Through implementation of the 201 construction grants program, dissolved oxygen levels have increased in many streams due to upgrade of municipal treatment levels. Significant improvements of DO levels due to upgrades have been documented for the Potomac Estuary, MD, Hurricane Creek, WV, South River, VA, Patuxent River, MD and the Delaware River, PA. However, many problems still remain, particularly inadequate treatment levels in small communities.
- Regional Priority Water Bodies: Back River (MD), Patuxent River (MD), Delaware River (PA), Neshaminy Creek (PA).
- Documentation: A cause-effect relationship for this problem is generally well established.
- Treatability: Technology exists for treatment of municipal waste to correct any dissolved oxygen problems in the receiving stream.

2. Barriers to Solutions

- Operation and Maintenance: Municipal treatment facilities have often been subject to inadequate operation and maintenance.

3. Management Implications

As with any resource limited program, a well founded priority system must be established.

- States: Review existing construction grants priority system for modifications which would attach higher priority to significant water quality problem areas. Assess current operation and maintenance programs and institute changes where necessary.

- EPA Region III: Provide guidance to the States regarding 1) modification of their priority systems to emphasize mitigation of water quality impacts on streams and 2) operation and maintenance programs.
- EPA-HQ: Develop appropriate operation and maintenance guidance.

4. Anticipated Results

The purpose of the priority system is to channel water pollution control monies to where the benefit gained will compare most favorably with costs. Improvement in the system will increase the efficiency with which funds are spent. Proper operation and maintenance will assure that these benefits do not decrease with time.

POINT AND NON-POINT SOURCES/BACTERIA

1. Description of Problem

- Sources: Municipal Waste/Industrial/Agricultural/Urban Runoff/On-Lot Disposal/Combined Sewer Overflows/Marine Vessels

- Impaired Uses: Shellfishing, domestic water supply, bathing

- Method of Impairment: High bacteria levels may require closure of shellfishing and bathing areas to prevent disease outbreaks, while appearance in surface water supply intakes may require excessive use of chlorine for disinfection, resulting in harmful chlorinated hydrocarbons in finished water.

- Regional Significance: In the States of Virginia, Delaware and the District of Columbia, it has been estimated that more stream miles are impaired by bacteria levels than any other parameter, while in Maryland, it is the second most widespread problem. In Pennsylvania and West Virginia, state agencies have found that criteria are exceeded in most waterbodies during some portions of year. Some violations are serious enough to constitute use impairment, though documentation of their extent is incomplete.

- Regional Priority Waterbodies: Delaware River (PA), Upper Chesapeake Bay (MD), Shenango River (PA), Back River (MD), Pymatuning Reservoir (PA).

- Documentation: Documentation of use impairment and sources varies widely from State to State. Data is relatively comprehensive where potential or actual use impairments are significant, e.g., shellfishing areas.

- Treatability: Bacterial quality of point source discharger is controllable, as are combined sewer overflow and on-lot disposal system impacts. Agricultural and urban runoff contributions, however, have been difficult to control to date.

2. Barriers to Solutions

- Lack of Documentation: Data on 1) disease outbreaks due to bacterial exposure in the Region, 2) bacterial levels in Pennsylvania and West Virginia waters, and 3) source contributions of bacteria is lacking.

3. Management Implications

- State: Assess use impairment caused by current bacterial levels, identifying sources wherever possible.

- EPA Region III & HQ: None

4. Anticipated Results

Use impairments due to bacterial levels generally have not been assessed, with the exception of shellfish closures. Once use impairments are identified by states, cost-effective control programs can be developed.

OCEAN PROBLEMS

1. Environmental Problem

a. The Problem and Cause: The current and potential problems in Region III which involve impairment of ocean waters involve the following parameters and sources:

Source	Parameter
Ocean Dumping	Toxics (organic & inorganic), Pathogens
Ocean Discharges	Nutrients
OCS Oil & Gas	Drilling Muds, oil
Non-Point Source	Dissolved Oxygen

b. Regional Significance and Trends: The following summarizes the status and trends of environmental quality in the marine environment and identifies significant or potential problems of the ocean and coastal waters within the Region.

Status and trends 1970-1982

The overall health of coastal waters and the marine environment within Region III based on present knowledge can be considered good, although some indications of man's impact on this ecosystem are evident. In review of the sources of possible impacts to marine waters, only three point source problems were identified. All three are categorized as potential although none presently impairs the ocean resources. Non-Point Source impacts associated with massive agael blooms have been associated with fish and shellfish kills along the Delaware coast.

Ocean Dumping

At the present time there are no ocean dumpers within the Region. Between 1961 and 1980 there were 16 dumpers located at four different sites, all of which have been phased out. Appendix A shows total disposal at each site. Appendix A shows the location of all the disposal sites.

The only sites having significant impacts were the Interim Sewage Sludge site and the Acid-Iron Waste site. Both disposal sites were found to impact shellfish and micro-infauna due to high concentrations of heavy metals. In addition, pathogens caused the closure of significant shellfish beds near the sludge site. As noted, both sites have been closed to all dumping.

Ocean Discharges

Currently only one sewage treatment plant of any consequence discharges into ocean waters. The plant at Ocean City, Maryland, has a 20 mgd capacity and secondary effluent is discharged via diffuser pipe 3850 feet seaward of mean low water. A buffer zone in which the harvesting of shellfish is prohibited extends from 55th to 73rd Street and 1.5 miles out to sea. The State of Maryland shellfish monitoring program shows little or no bacterial counts in immediate surface waters but sediments are not surveyed for bacteria and little is known of adjacent benthic conditions.

Under the Clean Water Act, all dischargers must comply with secondary treatment requirements. Section 301(h) of the Clean Water Act provides for modifications of secondary treatment requirements for discharges into marine waters by publicly owned treatment works (POTWs) which demonstrate their compliance with 301(h) criteria. These criteria are promulgated in 40 CFR Part 125 Subpart G. These regulations were published on November 26, 1982.

To date no facility in Region III has been denied a variance request under Section 301(h), however, two facilities have been tentatively denied. These facilities are:

HRSD Chesapeake Elizabeth	VA0025275
HRSD Lamberts Point	VA0025259

Both facilities are located in the Norfolk Virginia area. Chesapeake Elizabeth discharges into the Chesapeake Bay in an area referred to as Crumps Bank and Lamberts Point discharges to the Elizabeth River.

By memo to EPA-OMDE (dated May 12, 1983) we identified eight municipalities and one federal facility as potential applicants. Since that time three additional facilities have expressed interest in 301(h) variances (Chesapeake, POrtsmouth and Philadelphia). The updated list is presented in Appendix A.

OCS Oil and Gas

Oil and gas drilling has been identified as a potential source of pollution. The accidental spill of oil from drilling platforms is regulated by the Coast Guard. To date there has been no oil and gas development although 28 test wells were drilled. The EPA issues NPDES permits for all drilling platforms which are primarily concerned with the discharge of drilling muds.

Non-Point Source

There is evidence of coastal eutrophication in waters of the Middle Atlantic Bight. Water masses along the New Jersey coastline and adjacent to the New York Bight have been shown to have high levels of primary production and phytoplankton biomass (Northeast Monitoring Program 1981). In 1976 a severe anoxic event took place in New Jersey coastal waters resulting in wide-spread fish and shellfish mortalities due to a massive phytoplankton bloom. It is possible in the future for the coastal waters of Region III to experience intermittent smaller scale problems resulting from over-enrichment of coastal waters. Estuarine plumes from large systems, the Delaware and Chesapeake, may carry high concentrations of inorganic and organic nutrients that add to the potential for eutrophication and increased oxygen demand. Other sources are enriched water masses originating in the northeast New York-New Jersey area with inputs from waste disposal and riverine discharge. Anecdotal information and observations in summer 1982 along the coast from northern New Jersey to Chincoteague, Virginia, of patches of discolored water and "slime" in the surf may be indicative of stresses resulting from increased nutrient input into coastal waters.

2. Barriers to Solution of the Problem:

N/A

3. Management Implications

a. Regional Actions:

Ocean Dumping

Two new disposal sites are presently being designated. The first is an incineration site located 140 nautical miles due east of the Delaware Bay. The second is a dredge spoils site located 12 nautical miles east of the Chesapeake Bay. Extensive monitoring programs are proposed for each.

Ocean Discharges

To date no facility in Region III has been denied a variance request under § 301(h), however, two facilities have been tentatively denied. These facilities are:

HRSD Chesapeake Elizabeth	VA0025275
HRSD Lamberts Point	VA0025259

Both facilities are located in the Norfolk Virginia area, Chesapeake Elizabeth discharges into the Chesapeake Bay in an area referred to as Crumps Bank, Lamberts Point discharges to the Elizabeth River.

The list of potential 301(h) variance requests is limitless since there are no restrictions as to who may apply. By memo to EPA-OMDE (dated May 12, 1982) we identified 8 municipalities and 1 federal facility as potential applicants. Since that time three additional facilities have expressed interest in 301(h) variances (Chesapeake, Portsmouth and Philadelphia). The updated list is identified in Appendix A.

OCS Oil and Gas

As indicated in 40 CFR 122.59, a general NPDES permit (as opposed to an individual permit) may be issued when a category of point sources within the same geographic area have discharges which warrant similar pollution control measures. In the case of dischargers within the Offshore Subcategory of the Oil & Gas Extraction Point Source Category, EPA has concluded that these type of facilities would best be regulated and controlled via a general permit.

The OCS General Permit issued by Region III will authorize discharges from all offshore oil and gas exploration facilities operating in the waters of the Mid-Atlantic Ocean seaward of the territorial seas of the States of Delaware, Maryland, New Jersey, New York, Virginia and North Carolina. These waters are described by the Department of the Interior's Bureau of Land Management (BLM) in the environmental impact statements for OCS Lease Sales, 40, 49, 59, and 76.

As noted above, the primary concern is with the drilling muds from the operation. Appendix A lists those muds which EPA has approved for discharge. Appendix A also identifies the proposed General Permit area.

The Region is also in the process in issuing its first individual permit to Shell Oil.

4. Emerging Problems/Issues

a. Dredge Spoil Disposal; Ocean disposal of dredge spoil will be taking place off the mouth of the Chesapeake Bay at the Norfolk spoil site. Environmental consequences that may result from this practice are localized and transitory depressions in water quality, alteration of benthic communities, bioaccumulation of metals and organics by benthic organisms, and localized shoaling resulting from spoil deposition.

b. The surficial sediments in the vicinity of the Philadelphia sludge dumpsite continue to show persistence of sanitary bacteria, viruses and potentially pathogenic amoebae. The site and the immediate vicinity is, therefore, still closed to shellfishing by the Food and Drug Administration.

c. Little is known of the effects, if any, on the nearshore benthic environment by the treatment plant outfall at Ocean City, Maryland. Possible parameters to be surveyed would be microbiology of sediments, benthic communities, and organic and inorganic chemical parameters. Effects would be expected to be seasonal.

d. The inputs of two major estuarine discharges, the Chesapeake and Delaware systems, has not been fully assessed. These estuarine plumes may be responsible for the transport of adsorbed contaminants and particulates to coastal waters. They may also carry high concentrations of inorganic and organic nutrients that may add to the potential for eutrophication and increased oxygen demand of coastal waters when combined with both enriched water masses and other non-point sources. The potential for intermittent wide-spread phytoplankton blooms exists and if such a situation does occur under the right meterologic and hydrologic conditions, finfish and shellfish mortalities may result due to lowered dissolved oxygen concentrations.

e. The potential exists for a catastrophic oil or hazardous materials spill primarily because of the large volume of tanker traffic using the major shipping lanes that traverse the coastal ocean.

f. Exploratory oil and gas operations are now taking place just off the edge of the continental shelf. If production begins, there is the potential for transportational oil spills as well as chronic low level pollution from operational discharges.

g. If ocean disposal of sewage sludge is resumed in Region III, it will be necessary to monitor the fate and effects of such activity to ensure that "unreasonable degradation" of the ocean environment does not take place or that the assimilative capacity of the receiving area is not exceeded before corrective action is taken.

DRINKING WATER PROBLEMS

1. Environmental Problem

a. The Problem

A problem of major environmental management importance is the provision of safe drinking water to the consumers in Region III.

b. Cause of the problem

The four most significant factors affecting drinking water, ranked in the order of highest priority first, are:

1. Small systems compliance
2. Response to unregulated contaminants
3. Pennsylvania primacy
4. Water quantity issues

c. Regional Significance

1. The elimination of small water system violations represents the highest priority problem of the drinking water program. Of the 5,854 community water systems in the region, 5,272 are small systems serving less than 3,300 people. These small systems supply 9.1 percent of the total population served by community systems. Small systems acccount for the great majority of non-compliance with the National Drinking Water Standards (approximately 98 percent of the persistent violations).

2. Only a hand full of the thousands of organic chemicals are regulated by the National Drinking Water Standards, yet many of these are being found in water supplies.

3. Since Pennsylvania has not assumed primacy, EPA is responsible for implementing the Public Water System Supervision program in that state.

4. The absence of adequate water supplies due to over pumpage, salt intrusion, ground water contamination, and drought situations continue to plague many public water systems.

d. Trends

1. The small water system problem is further magnified with respect to time because the Safe Drinking Water Act (SDWA) requires that all public water supply systems receiving exemptions be in compliance with the Standards by 1984 or 1986 (if the system intends to regionalize).

2. Although the scarcity of occurrence data on unregulated contaminants is recognized, there is no doubt that this problem will increase each day as more new organic substance are created.

3. Federal responsibility for implementation of the Drinking Water Program in Pennsylvania will not change unless Federal funding levels are increased.
4. Water quantity problems will continue to follow economic growth.

2. Barriers to Solution of the Problem

A financial study conducted by the EPA Office of Drinking Water in 1979-1980 indicated that many of the small systems cannot comply with the standards because of serious financing and/or operating problems.

As stated previously, the scarcity of occurrence data on unregulated contaminants is a serious problem. Also, the voluminous number of organic compounds prevents the formulation of health advisories and treatment data for every compound. This in turn makes Agency response to each incident very difficult.

Current fiscal problems with the Commonwealth's budget have been cited as the main reason the Commonwealth of Pennsylvania has not sought primary enforcement responsibility for the Public Water System Supervision (PWSS) Program. Another barrier is the uncertainty in DER's minds over continued Federal funding. Funding for State Administration of the PWSS Program has not increased since 1979. In fact, State grants were reduced in fiscal year 1983 and further reductions are projected for fiscal year 1984. The Commonwealth has perceived these reductions as deterrents to assuming the responsibility for the program.

The major barrier to the water quantity issue is the increase in water demand due to economic growth. A portion of these problems could be alleviated through the implementation of the proposed Ground Water Protection Policy. However, the Policy has not been released by Headquarters.

3. Management Implications

a. Regional Actions

1. EPA

The Region will continue to support the States both financially and technically in an effort to protect the public drinking water supplies. The Agency will continue to implement the Public Water System Supervision program in Pennsylvania as long as the State does not assume primacy.

2. States

The States will continue the front line struggle against economic, industrial, agricultural, and environmental practices which have caused increasing concentrations of harmful chemicals in drinking water sources. States will give priority to those problems which have the greatest public health significance affecting the greatest number of consumers. Decreases in funding at a time when there is a need to meet increasing responsibilities in areas more difficult to address will continue to be a major management problem.

b. EPA Headquarters Actions

Headquarters will continue to receive pressure from both the States and the local citizens to be more responsive to the need to provide safe drinking water.

4. Anticipated Results

Resource decisions made by Headquarters will undoubtly have a barometric affect on the future of the nation's drinking water quality.

5. Emerging Problem/Issues

a. Implementation of proposed National Revised Primary Drinking Water Regulations addressing the Volatile Synthetic Organic Chemicals in Drinking Water. New regulations are a drain on reduced grant resources to the States.

b. Compliance with the Trihalomethane Regulations in Virginia for those systems serving between 10,000 and 75,000 people.

c. Increased water supply problems facing decreased Federal funding to States for administration of programs.

GROUND WATER PROBLEMS

1. Environmental Problem

a. The Problem

Generally, existing and potential ground water pollution problems have been identified in the Region as eminating from a variety of sources such as agricultural practices/animal wastes, on-lot waste disposal, salt water intrusion and industrial/municipal residuals. In West Virginia and Pennsylvania additional threats to ground water quality have been identified, such as coal mining activities, acid mine drainage, gas and oil storage, transmission and exploration. Additionally, there have been reported 87 isolated incidents of ground water contamination during the last eight years throughout the Region; some incidents also include Superfund sites. The incidents reflect either a non-compliance incident or an incident report that reflects only on the ground water problem in the immediate area. Given the data gaps listed in Section 2, we can only estimate what additional incidents are occurring and going unreported. The most outstanding issue identified during the compilation of the GWEMR was the lack of a detailed regional ground water data base. Presently, the various States in the Region appear to have a more developed ground water program than the Agency, as well as a better knowledge of the aquifers used for water supply. However, the majority of the reliable data obtained to date is from EPA's public water supply records and not the State's ground water data base. In order to better understand and define existing and future problem areas, a detailed data base must be formulated. Also, the Region is planning to meet with the States in an effort to define problem areas. The strategy to accomplish this is outlined in Appendix B.

b. Cause of the Problem

The previoulsy discussed problems have been caused in the pastby a lack of concern for ground water protection, an inadequate knowledge of the local geology, and the false assumption that the soil/rock overburden adequately protects ground water from pollution sources.

The problem of not having an adequate ground water data base stems from the fact that the relative need for such a base has not been previously realized. Better analytical methods enabled us to improve our detection analysis enabling us to uncover more ground water problems. Further, the increased use of toxic materials and better information on the inadequacy of local geologic formations to assimilate the waste has increased the susceptibility for contamination. Our increased knowledge of health effects has also shown that previously neglected ground water contaminents are signficant adversaries to our health. All of this has caused us to realize that we do not have an adequate ground water data base to assess the current problems.

c. Regional Significance

With about 80% of the Region's water supplies depending on groundwater, that once contaminated, ground water holding formations are relatively hard to clean-up, and with the knowledge that contamination sites will grow in number with population and industrial activity, ground water protection problems are ever increasing. Given the fact that it is the most significant "discovered" media, it has the most potential for protection with the greatest benefit for the cost incurred.

d. Trends

The Region's ground water trends were based upon two information sources, the Ground Water Compendium and RCRA/Superfund sites. The Ground Water Compendium contains isolated incidents of ground water contamination that have been brought to the Water Supply Branch's attention through a variety of means. The compendium presents the date of occurrence of the incident, the type of contaminant(s), the type of water supply system (private, public), a narrative statement, and the investigative agencies.

The RCRA/Superfund sites were screened toward reported sites having known/or potential impacts on subsurface drinking water supplies. To better understand the Region's ground water problem areas, these sites are included in the Ground Water Compendium.

The following data sources were used in compiling the trends in ground water contamination:

- Geologic maps and cross sectional maps
- Topographic maps
- USGS and State reports on geology and ground-water resources
- Descriptions of underground sources of drinking water in West Virginia and Maryland
- RCRA/Superfund site evaluations
- Water Quality Management Reports
- Areawide environmental assessments for coal mining in West Virginia
- Water Supply Branch files

Delaware has identified agricultural practices/animal wastes, on-lot waste disposal, salt water intrusion, and industrial/municipal residuals as ground water pollution problems. The Region's Ground Water Compendium cites 17 incidents of contamination over 1976-1982. Of these, 10 consist of contamination by TCE, PCE, and other organics. The occurrences are principally in New Castle County, the most urbanized of Delaware's three counties. Nitrate contamination has been identified as a statewide problem and a localized problem in Southern Delaware due to agricultural activities and especially the large number of broiler farms. Coliform/nitrate contamination of numerous wells in the community of North St. Georges has been attributed to on-lot waste disposal systems.

Saltwater intrusion has been identified as a problem in coastal areas; the Ground Water Compendium cites an incident in Rehobeth. The State contains four Superfund sites: Army Creek, Tybouts Corner, Witco, and Stauffer.

Currently, there are no public water supplies in the District of Columbia using ground water as a source. No ground water contamination incidents have been reported. The Region does have a geologic map, well location map, and a USGS paper on ground water resources of Washington, D. C. and vicinity. Generally, the Region does not perceive the District as having any ground water problem areas.

Maryland has identified agricultural practices/animal wastes, onlot disposal, salt water intrusion, and industrial/municipal residuals (particularly in the Baltimore area) as potential ground water problems. The Region's Ground Water Compendium identifies 10 incidents through 1979-1982. Of these incidents, 9 involved organic contaminants (TCE, PCE, benzene, paraquat, and others). One incident involved mercury and a second hexavalent chromium. Underground sources of drinking water in Maryland have been described as part of the State's draft UIC application.

The bulk of information on ground water contamination in the Region covers Pennsylvania. This is principally due to the Region's direct involvement in implementation of the Safe Drinking Water Act. The number of incidents reported does not necessarily reflect the seriousness of problems, but merely the Region's access to information. Nevertheless, 54 of 89 incidents contained in the Ground Water Compendium occurred in Pennsylvania. Of the 54 incidents, all but 12 involved TCE and/or PCE contamination. Twenty-five incidents of TCE contamination were reported in Bucks and Montgomery Counties, the Greater Philadelphia area; 16 involved community water supplies. The Water Supply Branch has sampled 240 public water supplies throughout the State for organic contaminants. The sampling sites represented about 1% of supplies in the State; at least 2 samples were collected in each county. Additional organic data is supplied by the National Ground Water Supply Survey. This survey has data to statistically determine the presence and levels of volatile organic chemicals in the ground water. Many of these types of compounds have been involved in a number of previous ground water contamination incidents. The State has identified coal mining activities, gas and oil storage, transmission and exploration, and extensive agricultural activities as some of the major threats to ground water quality some of which are used as a drinking water source. Additionally, nitrates have been identified as a ground water problem; and salt water intrusion has been identified as a problem in the Bradford/Erie area. Superfund sites that surfaced high in our rating system are: Fisher and Porter, Stanley Kessler Company, Metal Bank of America, McAdoo Associates, WADE, Enterprise Avenue, Bruin Lagoon, Centre Company, and Lehigh Electric.

The Region's Ground Water Compendium contains only 1 incident of ground water contamination in Virginia: hexavalent chromium in Roanoke County. Fluoride contamination has been reported also in the Roanoke area. Agricultural practices/animal wastes, on-lot disposal, urban runoff and industrial/municipal residuals (particularly in the Hampton Roads area) have been identified as potentially impacting ground water resources. The most significant Superfund site was Matthews Electroplating.

The Region prepared Areawide Environmental Assessments for 7 river basin areas in West Virginia containing coal resources. The assessments focused on mining-related impacts on ground water, and not on contamination by municipal/industrial sources. Areas examined included the Coal/Kanawha, Elk, Gauley, Guyandotte, Monongahela, North Branch Potomac, and the Ohio/Little Kanawha river basins. The State has identified acid mine drainage as a ground water pollution source. Localized ground water problems are discussed in the assessments and include high sodium chloride, sulfate, and iron levels. Fluoride is a common constituent of West Virginia oilfield brines and is present in measurable amounts in most ground water. In the Little Kanawha area, fluoride in well water ranged from trace amounts to greater than 2.0 mg/l. Additional suspected contamination sources include agricultural sources, on-lot disposal, landfills, and oil and gas fields. The Region's ground water compendium identifies 7 additional incidents.

State Summary

To summarize the trends in ground water contamination, the Ground Water Incident charts illustrate the number of ground water incidents reported in each State with the exception of the District of Columbia. The Region presently has no ground water incidents reported for the District of Columbia. However, as previously stated, the charts do not reflect the seriousness of the problem in each state but rather the Region's limited data base.

The following terms and definitions should be used in conjunction with the Ground Water Incidents charts.

- Community-public water supply system serving year round residents.
- Non-community-public water supply system that is not a community water system, such as a motel or campground.
- State-wide - a contamination incident that is occurring throughout the State.

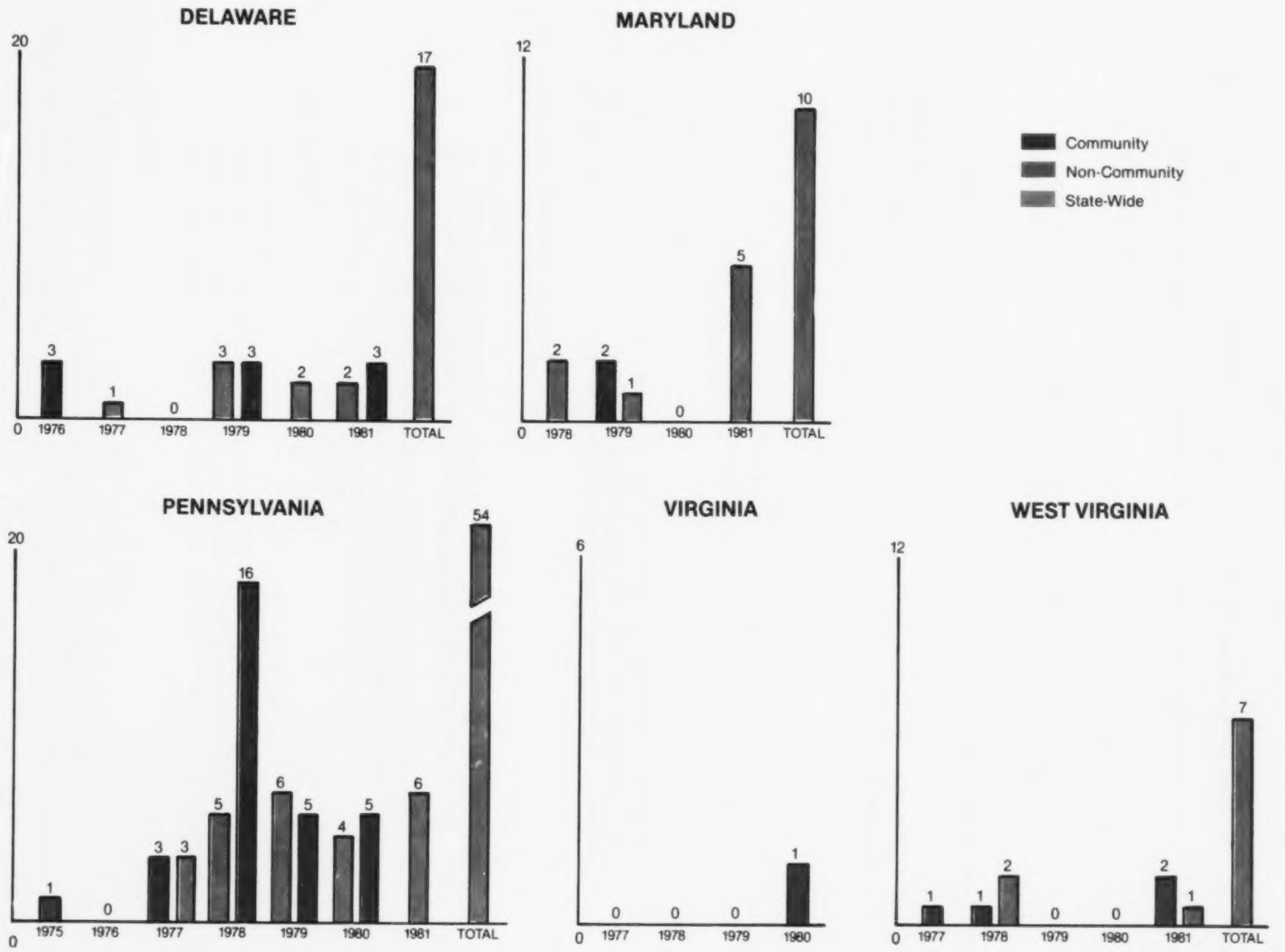
2. Barriers to solution of the problem

In order to formulate the management of a comprehensive ground water protection program, the following information is to be developed:

- maps of primary, secondary, and critical aquifer vulnerability areas.
- information on public water supplies.
- maps of hazardous waste sites, landfills/dumps, and land treatment sites.
- geohydrological data for all portions of each state (This is due to gaps in the Region's reference library).

The development for such a data base is very resource intensive which may cause some problems in completing the task in a timely fashion.

GROUND WATER INCIDENTS



3. Management implications

   a. Regional actions

      (1) EPA

      The data base is to be developed by the Regional Office staff so that existing problems can be better defined and future problems avoided. The strategy to accomplish this is outlined in Appendix B.

      (2) States

      As Appendix B shows, State coordination will be a continung process. States have a more detailed ground water data base than EPA, and will serve as a critical part of our strategy.

      State meetings to share ground water information and to refine our data base techniques have already been held in Delaware and Maryland.

   b. EPA Headquarters actions.

   No EPA Headquarter's actions have been identified as being required at this time. Obviously, information sharing and the solicitation of guidance and support are generic to this and all Regional efforts.

4. Anticipated results

The successful completion of the strategy in Appendix B, the develop ment of a ground water data base, accomplish the following:

a. Communicate to management regional ground water contamination trends.

b. Technically aid the Regional Office in describing the relationships between aquifer vulnerability areas, contamination sites, and water supplies.

As the base grows in sophistication, we will become more efficient in enforcement and protection actions, such as:

a. Take better enforcement initiatives because our ability to screen potential cases/sites will improve.

b. Better ability to show the relative need to design protection into sites.

c. Improve our ability to advise on site/water supply location.

d. Improve on our ability to determine cause/effect predictions.

5. Emerging problems/issues

Several issues are becoming of more and more significance:

The relationship between the several Federally sponsored programs are growing in importance, e.g., coordination of multijurisdictional situations (Class I - Hazardous injection wells), the strategy for handling increasing numbers of small system generators, and the need to customize multifaceted programs to State-local needs. We are working on a coordinated effort to handle most of the currently identified issues.

Additionally, the lack of a national ground water policy handicaps us in the sense that Regional efforts lack national reinforcement.

Hazardous Waste Problems - RCRA

The hazardous waste management program is relatively new, beginning with the implementation of RCRA. Therefore, data collection systems are just being developed which allow EPA to monitor hazardous waste activities.

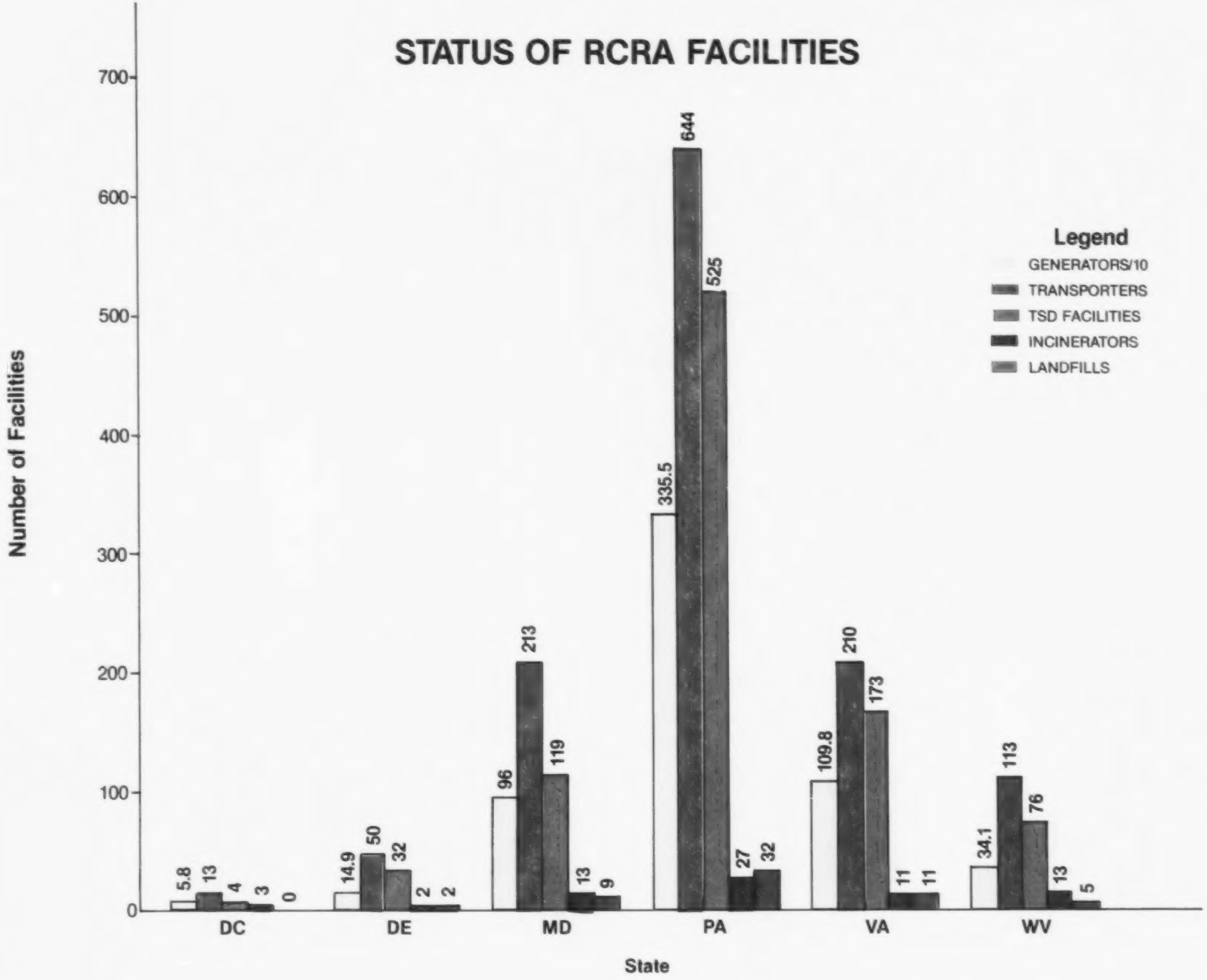
Through RCRA permitting and compliance activities, Region III is beginning to develop a data base whereby problem areas can be identified. Figure I and Attachment A include an analysis of existing data. However, the lack of a sound data base has prevented a detailed analysis and prioritization of problem areas. Therefore, definition of problems within the hazardous waste management program are based on less tangible criteria.

Relying on preliminary data acquisition and State and Regional knowledge of the scope of hazardous waste activities, Region III has identified four problem areas that are both current and emerging. They are:

- Groundwater contamination
- Siting of hazardous waste facilities
- Hazardous wastes in sanitary landfills
- Illegal dumping of hazardous wastes.

Region III believes that all four problem areas are significant enough to merit the highest priority. We will continue to monitor incoming data to refine the scope of these problems and to pursue feasible solutions.

STATUS OF RCRA FACILITIES



Groundwater Contamination

1. Description of Problem

- Sources: Facilities with hazardous waste land disposal. These are facilities with landfills, surface impoundments and land treatment. The problems addressed here are facilities that have been active after November, 1980.

  Impacts: All facilities that treat or store hazardous waste in surface impoundments or dispose of hazardous waste in landfills, have a great potential to adversely impact the environment. The impact could be permanent contamination of groundwater.

- Regional Significance: There are approximately 200 hazardous waste treatment, storage, or disposal facilities (TSD's) in the Region with active processes that require groundwater monitoring. The region, in cooperation with the States, must identify sites where significant contamination has occurred and implement measures to prevent further contamination and restore groundwater quality, if possible.

- Regulatory Status: The Resource Conservation and Recovery Act (RCRA) has required the installation of groundwater monitoring only since November 1981. Initial reports were available since August 1982. Contamination Indicator Reports were due March 1, 1983.

- Documentation: Since the regulations have recently required reporting on groundwater monitoring, the information available requires evaluation. There are problems with the quality of the data as supplied by the facilities. Enforcement actions have been initiated to require installation of wells, and submission of reports.

- Remedial Actions: A major problem is that the regulations do not provide a mechanism for requiring prevention of and removal of contamination until the facility is required to be permitted. Therefore, regulatory concerns are on identification. Only where an imminent hazard can be demonstrated, can the contamination be addressed by regulations requiring cessation and removal of contamination.

2. Barriers to Solutions

- Lack of Data: The information now available has been generated by the facilities. There are many quality control issues. The proper placement of monitoring wells, the proper sampling, and proper analysis need to be evaluated. There are also facilities that should have groundwater monitoring that have not been identified. Data from authorized States is not readily available.

- Lack of Guidance: There have been several regulatory changes that have delayed this program. There has been proposed but never issued guidance to the regulated facilities. There are several issues on listing or de-listing hazardous wastes that impact the groundwater monitoring regulations' applicability. The issues have not been resolved. Where contamination has been identified, there is no consistent approach to methods of preventing further contamination and removal.

3. Management Implications

- States: (1) All States in the Region have agreed during FY 83 to conduct thorough inspections at facilities with land disposal. The inspections will concentrate on issues such as placement of wells and proper reporting. Also, there will be a concerted effort to identify those facilities with contamination or highest potential for contamination. There is an ongoing program to find facilties out of compliance with monitoring regulations.

  (2) As facilities are called-in, in the permitting process, the delegated States will have the regulatory powers to require cessation and removal of contamination.

  (3) The States have either proposed or have in effect regulations that address contamination prevention and removal, such as groundwater monitoring at sanitary landfills.

- EPA Region III: (1) The Region has initiated a concerted program between RCRA, Groundwater Protection and Remedial (Superfund) Sections to review data and take appropriate action.

  (2) With the effective date of final Land Disposal Regulations, January 26, 1983, the Region has called-in the Part-B's of those facilities.

  (3) Regional field personnel have initiated a program of sampling with the facility, and splitting samples for analysis as a quality control measure.

  (4) Part B call-in facilities will be inspected by Regional personnel, independently or jointly with the States.

  (5) Where violations are detected that are imminent hazards, swift enforcement action will be taken, regardless of delegation.

  (6) Lesser violations, as identified, will be addressed to gain compliance as soon as possible.

  (7) The Region will upgrade staff personnel with expertise in geology and hydrogeology, and provide this to the States where necessary.

- EPA Headquarters: (1) Guidance should be provided to the regulated community.

  (2) Consistent and effective regulatory guidance on groundwater issues should also be provided

  (3) Headquarters should resolve issues on waivers and definitions of hazardous waste and processes that may or may not be regulated.

  (4) Additional resources should be provided to the Region to effectively conduct this program.

  (5) Headquarters should coordinate and disseminate information available from other Regions on this problem.

  (6) Headquarters should revise, update, or expand groundwater monitoring requirements, such as additional contamination parameters.

  (7) Headquarters should also conduct research to determine the best technology to prevent further contamination and restoration of groundwater quality.

4. Anticipated Results

- The efforts of the States, the Region, and HQ should result in identification of sites with contamination.

- Sites with severe contamination will be addressed quickly to prevent further contamination.

- Firm decisions will be made on deciding where a restoration is feasible, and if not, measures to prevent further deterioration.

- Violators will be identified and appropriate enforcement action will be initiated.

- As this strategy is carried out, there should be the prevention of new sources of contamination and a recovery of some sources. At some sites the best result may be only maintainence of current contamination levels without deterioration.

5. Emerging Problems

- The problem is well defined now.

- Issues as described above have emerged. An effective strategy to address the problem is a current issue. Costs for prevention of and removal of contamination will be a major issue.

- The issue to be addressed is that severe groundwater contamination can result at facilities that have hazardous waste but do not use land disposal. There are historic examples of groundwater contamination resulting from improper handling and storage of hazardous waste, or raw materials or products that could be hazardous. Discharges of materials that are contaminants from drums, tanks, or other containers can and have impacted the groundwater. These types of storage are not regulated for identification of contamination. Some States, for example, require groundwater monitoring at sanitary landfills. Groundwater contamination can occur from other sources than surface impoundments and landfills that are not addressed by the regulations.

Siting of Hazardous Waste Facilities

1. Description of Problem

- Problem: Hazardous waste disposal has for the most part been a function of the private sector. However, it has become increasingly difficult to develop new hazardous waste facilities, particularly secure landfills.

- Cause of Problem: Most of the problems of siting such facilities stem from opposition by the public and the lack of an established means of resolving siting conflicts. Public opposition occurs for several reasons. The public has an inherent fear of anything that is potentially harmful and is suspicious because of accounts of problems with existing or abandoned sites, e.g., Love Canal. Therefore, it lacks confidence in industry's and government's ability to manage wastes safely. There is also the perception of a stigma of being a community in which hazardous wastes are managed and the fear of deteriorating property values. Because of these perceptions, the public has adopted a "not in our backyard" attitude, feeling that another site would be better, either because the wastes are generated elsewhere, or because another location may be safer.

- Regional Significance: This reluctance on the part of the public to allow new facilities has resulted, in some instances, in a large gap between the volume of waste generated and the capacity for treatment and disposal. In addition, Federal and State regulations will inevitably force some existing facilities to cease operations, further decreasing waste management capabilities. If new facilities are not established, the present disposal capacity will soon be exhausted and limit a State's ability to promote industrial development and eliminate indiscriminate, unsafe disposal.

- Trends: The data base on wastes generated and disposal capacity is just being developed. As the RCRA permitting process takes full effect, there will be more information on the ability to handle hazardous wastes at existing facilities and the extent of the need for new facilities to properly manage the wastes being generated.

2. Barriers to Solutions

- The location of properly managed hazardous waste facilities will depend on the State's ability to establish siting criteria and to overcome public and local government opposition.

- Additional resources will be necessary to develop and maintain the tracking systems used to monitor waste handling capacities.

3. Management Implications

- States: Recognizing the need for new facilities and the need to overcome public opposition, many States are beginning to assume an active role in the siting process. For States that have not done so, they should establish siting boards that will preempt local zoning laws, develop siting criteria, identify potential sites, provide for local input, and review proposed sites and facilities. Other innovative techniques the States may wish to utilize are to establish State hazardous waste facilities, acquire land for use as a waste facility, and issue industrial development bonds to finance hazardous waste facilities.

  The local governments also play a role in the site selection process. Since the local authorities are often-times the first ones to respond to problem situations, it is in their best interests to provide input by reviewing contingency plans and by interacting with State siting boards. Local governments may also address problems or situations not dealt with by RCRA, EPA, or the States, such as the preparedness for post-closure emergencies.

- EPA Region III: The Regional office is encouraging the States to assume primary responsibility for siting new facilities. The States are the most appropriate level of government to plan for hazardous facilities because of the regional nature of some of the facilities and the States have broad police powers, including land use and the right of eminent domain. These authorities are desirable and may be essential in the site selection process. To assist the States in this process, the Region will provide technical assistance to the States on various aspects of siting and in the development of public participation programs. The Region may also assist the States in developing an adequate data base whereby the amount of waste generated and waste handling capabilities can be monitored.

- EPA Headquarters: Headquarters assistance would be most helpful in the expansion of HWDMS to monitor generators of hazardous waste and waste disposal capabilities. This information should be made available to the Region and the States. Guidance on siting criteria and public participation should also be provided to the Region and the States.

4. Anticipated Results

- The establishment of siting boards and siting criteria will provide a means to locate hazardous waste facilities in the most appropriate places.

- Siting boards will be available to resolve conflicts between public and private concerns.

- Development of a computer system will allow the States to monitor their ability to properly manage hazardous wastes and plan for future needs.
- Involving the public in the siting process will help eliminate opposition to the location of hazardous waste facilities.

5. Emerging Problems

As more data becomes available, the extent of the need for additional disposal capacity and its implications will become more evident.

Hazardous Waste in Sanitary Landfills

1. Description of Problem

- Problem: It is believed that many small quantity generators are taking their hazardous waste to less strictly-controlled sanitary landfills. Approximately 90% of the generators of hazardous wastes qualify as small quantity generators.

- Cause of the Problem: The criteria for small quantity generators under the Hazardous Waste Regulations promulgated under Subtitle C of RCRA, exempt those who generate under 1,000 kilograms per month of hazardous waste from full regulatory requirements. It is believed that many of these small quantity generators may be avoiding regulated waste facilities in lieu of less-strictly controlled sanitary landfills, because the regulated facilities may be rejecting them due to their size and the fact that they are usually not covered by a manifest.

- Regional Significance: Continuation of unabated midnight dumping is likely. Hazardous wastes are accumulating in sanitary landfills creating many potentially dangerous situations.

- Trends: There is currently no data available to identify trends. However, the results of the dumping of hazardous wastes in unregulated landfills precipitated the Superfund Program.

2. Barriers to Solutions

- Congressional proposals to amend the exemption criteria to 100 kilograms/month contains a short implementation timeframe which could adversely impact EPA and the regulated community by causing resource hardships on both.

- Solutions which address Subtitle C amendments would require increased Agency and State funding.

- Solutions which address Subtitle D amendments would require that Subtitle D funding be re-initiated.

3. Management Implications

- States: The States will basically follow Federal initiative. Following are the results of a poll of Region III States on tightening the requirements.

- EPA Region III: Region III should continue to support all National activities to mitigate this problem. The Regional Office will monitor States which control small quantity generators as part of their more stringent State programs.

- EPA Headquarters: EPA has recommended a longer timeframe for implementation while the Agency monitors those States which have imposed tighter limits on small generators. In addition, EPA has recently initiated a two-year study of alternatives for regulating the small quantity generators.
- One of the criticisms of tightening the exemption criteria is that it would cause hardships on the regulated community. The Agency could explore the use of some types of SBA loans to help these small generators comply with the regulations.
- Another suggestion is to develop a less comprehensive manifest procedure for use by small quantity generators.
- An amendment to the exemption criteria could be developed to prohibit small generators from utilizing sanitary landfills with no capability to handle hazardous wastes.

The above recommendations concentrate on the hazardous waste regulations. However, the problem could be addressed by revising Subtitle D as follows:

- Design a collection system that is appropriate to the modified standards. Impose groundwater monitoring requirements at these municipal landfills to ensure early detection of any possible contamination.
- Bring industrial landfills under Subtitle D standards.
- Provide funding to States to establish waste exchanges which can operate as clearinghouses for small generators for the disposal of their hazardous wastes.

4. Anticipated Results

- During Congressional Reauthorization Hearings there will probably be continued efforts to amend the exemption criteria from 1000 kg/month to 100 kg/month of hazardous waste as defined by Section 261.

5. Emerging Problems

- An amendment to the exemption criteria will affect EPA and State resources, and will impact the regulated community.

STATE POSITIONS ON SMALL QUALITY GENERATORS

PENNSYLVANIA - Not in favor of lowering kg limit. Feels it would be too overwhelming a task and not accomplish a high degree of environmental protection. Pennsylvania does, however, require landfill operators to obtain written approval for disposal of shipments of hazardous waste, not normally covered under RCRA.

DELAWARE - No consensus of opinion. Certainly, if a survey showed we were not regulating a large amount of waste because of the 1000 kg exemption, it may be worthwhile. It may also be worthwhile as a revenue basis if a fee schedule is established. However, in general, State feels that too many small businesses (gas station and dry cleaners) would be brought into the system. It would also be very resource intensive and it is doubtful (without survey results) that it would significantly increase environmental protection.

VIRGINIA - Virginia will follow Federal initiative.

MARYLAND - Supports a lower limit for exemption somewhere between 100 kg and less than 1000 kg.

DISTRICT OF COLUMBIA - One year after the effective date of their regulations, the limit will drop to 100 kg or less for small generators. The projection for this drop is August, 1984.

WEST VIRGINIA - West Virginia has no plans to drop the limit for small generators. Small generators are required to maintain records of how much and where their waste is disposed as applicable to manufacturer.

Illegal Disposal of Hazardous Wastes

1. Description of Problem

- Problem: One of the ever present problems concerning hazardous wastes and its disposal is the existence of "midnight dumpers". These illegal disposers offer a cheap and convenient method for hazardous waste generators to avoid their responsibility of securing a safe site for their wastes' disposal.

- Cause of the Problem: As mentioned above, one of the primary advantages a "midnight dumper" has over a reputable disposer is the amount of money he can charge for waste disposal. The "out of sight, out of mind" outlook of hazardous waste generators towards their disposal practices has allowed many illegal dumpers to practice their trade.

- Regional Significance: This problem is not only a regional problem but is obviously a national one. On the other hand, it seems apparent that these practices have been prevalent regionally in years past as witnessed by the number of inactive dumps being evaluated and cleaned up under the Region's Superfund program.

- Trends: As industry and the public become more environmentally educated, it will be more difficult for midnight dumpers to continue to dispose of wastes illegally. The prevalent unsafe dumping of the past was substantially curtailed with the inception of the Resource Conservation and Recovery Act in 1980. Regulations promulgated under this Act have placed anyone who generates, transports, treats, stores, or disposes of hazardous wastes into a "cradle to grave" tracking system of the disposal of that waste.

2. Barriers to Solutions

- Members of the RCRA regulated community who have complied with the paperwork requirements are part of an administrative monitoring system which can detect violators through such mechanisms as the manifest system, annual reports, exception reports, and unmanifested waste reports. The problem with detecting illegal disposers is that most often they are not part of the RCRA reporting system and therefore cannot be found in readily available data sources. From this barrier, the problem of additional tracking resources arises.

3. Management Implications

- States: The States located in the Region would obviously be able to carry many of the Region's actions a step further. They also could educate the public on the problem of "midnight dumpers" and set up hotline telephone numbers for tips and offer rewards. Their own enforcement and environmental organizations could work together and with local authorities to help crack down on illegal disposers. The States could also step up their transporter inspections by spot checking at weigh stations, interstate lines, and toll bridges.

- EPA Region III: Region III has already provided one solution by establishing a toll free hotline telephone number to be called when instances of dumping are witnessed. Part of this approach must include making the public aware of the problem and relying on their watchful eye to notify EPA of mysterious waste disposal practices. Rewards could be made available for further incentive to call the EPA. The Region must also strive for a close working relationship with other local, state, and Federal law enforcement and environmental agencies. These organizations could possibly come across information regarding the illegal disposal of hazardous wastes in their daily routine. Possibly the best way for the Regional office to become involved on a first-hand basis would be to randomly check on the middle link of the disposal chain - the transporter. Inspections of trucks at various locations would allow EPA personnel to examine manifests and validate the substances being shipped.

- EPA Headquarters: Headquarters could also help with the strategies mentioned above by providing guidance, additional resources, and training. Resources would be needed for additional Federal inspectors and state grants which would provide for State assistance in tracking down illegal disposers. Also, a national reward bank could be set up from which the Regions could draw when necessary. EPA Headquarters could also establish working agreements with other Federal agencies to provide information and assistance in finding and enforcing against known violators.

4. Anticipated Results

As State, Regional, and Headquarters efforts increase in stopping the illegal disposal of hazardous wastes, the environment will become less vulnerable to these dumpers. As cases are brought to trial, both criminally and civilly, the public will become more aware of the problem and find it easier to help while the community of midnight dumpers will see the penalties which result from their activities.

5. Emerging Problems

The development of the RCRA hazardous waste program by EPA has been going on for more than 5 years and is still changing and growing. Establishing a system to catch the violators who exist on the outer limits of the waste disposal universe will require large amounts of time and money and it will depend upon the American public to make the elimination of illegal disposers an important issue for this program to succeed.

Hazardous Waste Management - Superfund

Environmental Problem

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) was enacted to provide authority and funding for the cleanup of the most hazardous waste sites in the Country. Because of the limited funding and short duration of the so-called Superfund program, EPA must manage the program activities in a cost-effective manner which provides measurable evnvironmental results.

The National Priority List proposed in the December 30, 1982 Federal Register contained 418 sites considered to be the most hazardous sites in the country based as the Hazard Ranking System.

The program operations are broken down into emergency actions (those actions required expeditiously to project the public health where an eminent danger exists) and the remedial actions (those long term actions requiring detailed planning where no emminent danger exists).

Emergency actions can range from securing the site to prevent public exposure, the controlling of surface runoff, furnishing of uncontaminated drinking water, on-site neutralization, to actual removal of the hazardous material.

Remedial actions tend to larger scale solutions such as on-site encapsulation and/or contaminated soil removal in combination with other types of actions.

The Problem

Region III staff has identified the following problems involved with the efficient, cost-effective management of the Superfund remedial program.:

a. Priority Ranking of Sites

The first problem with designing a cost-effective remedial program is the process of priority ranking of sites and the selection of an appropriate indicator of environmental results. Fortunately, the Superfund program has such a process in the Hazard Ranking System (HRS) promulgated as part of the National Contingency Plan. The HRS, in considering character and quantity of waste, routes of exposure and the release or threatened release of contaminants, evaluates hazardous waste sites based on their relative threat to populations and the environment. Therefore, by addressing sites in priority order as determined by the HRS, EPA is assured, within the limits of its knowledge at a given time, that it is proceeding in a manner that will yield the greatest environmental results.

The system does have its limits, particularly since not all potential sites have been investigated and the HRS has not been applied to all those which have been. Also, the HRS does not consider public concerns or interactions which could raise a particular site to a higher level of attention. Despite these limitations, the HRS provides a useful indicator for effective environmental management. In order to assure that potential sites are ranked by HRS, the Region has devoted approximately 80% of its available contractor (FIT) resources and six manyears of staff effort over the balance of FY'83 in an attempt to screen and rank the remaining remedial sites. Some states, most notably the Commonwealth of Pennsylvania, are also devoting a significant amount of resources to this effort. We expect all of the states to assist in this effort once the § 3012 grants are in place. These grants represent the number one priority for Headquarters action in this area.

b. Time Required to Clean Up Sites

One of the criticism of the Superfund program is that it moves too slowly in cleaning up sites. With respect to the NPL sites, it may take approximately two years per site before the remedial program completes the necessary studies, design work and administrative steps needed, and finally proceeds with cleanup. Few citizen organizations are willing to wait two years for a cleanup after becoming aware that a hazardous site exists in their community.

c. State Costs

A significant problem arises with the inability of a State to provide its cost share for the clean up. Clean up operations are very expensive and some States are experiencing considerable difficulty in providing their cost share.

Regional Significance

Forty-nine of the sites on the National Priority List are located in Region III. A list of the 49 sites in HRS priority order is included in Appendix A. Maps which identify the location of the sites within each state are also included.

Remediation of the hazards identified to date at the forty-nine Region III National Priority List (NPL) sites will be pursued under one of four mechanisms: 1) voluntary cleanup undertaken by a responsible party; 2) fund-financed cleanup (followed by recoupment, where appropriate); 3) cleanup resulting from federal or state enforcement; and, 4) cleanup of a site using both enforcement tools and fund financing ("dual-track").

Of the forty-nine NPL sites, Region III has identified 27 sites where either federal or state enforcement mechanisms are or will be used to effect cleanup of the sites. Superfund financing is expected to be required for the cleanup of at least fifteen of the sites. The remaining seven sites will be on a "dual-track" where fund-financed investigation and cleanup actions will be undertaken concurrently with enforcement efforts. For purposes of this discussion, sites where we anticipate voluntary cleanup have been included with those subject to federal or state enforcement.

Appendix A lists those sites where remedial action is planned or underway in fiscal year 1983. In accordance with our current obligation on strategy, in fiscal year 1983, Region III intends to complete 29 Remedial Action Master Plans (RAMPs), 17 Remedial Investigations/Feasibility Studies, and 3 remedial design and construction projects. The cost to Superfund for these activities is estimated to be $9-12 million.

Region III has the second highest number of removal projects in the nation with over a dozen completed to date, at a cost of some four million dollars.

Under the removal program seven Voluntary Compliance Actions have been initiated to date, one planned removal action has been completed and two others are under way. One Enforcement Referral has been sent to Headquarters and an additional eight are being processed in the Region.

Trends

As more investigative actions are taken, more sites are discovered. As these sites are ranked, they will be added accordingly, to the National Priority List.

Barriers to Solution of the Problem

Once a site is properly identified and ranked, there are a number of barriers which may impede progress in cleaning up the NPL hazardous waste sites. These include inability of a state to provide the required cost share for the study or remediation of a problem at a site; fund balancing requirements of CERCLA necessary to administer the limited of funds available for cleanup; and, the potential inability, in certain instances, of enforcement mechanisms to effect an expeditious cleanup of a site.

Of these potential barriers to the cleanup of a site, the most serious is the inability of a state to provide its required cost share for the cleanup. Any delay or failure on the part of a state in committing or providing its cost share will significantly delay the cleanup of a Superfund site. Several states in the Region are encountering difficulty in securing funds for the required cost sharing.

The Pennsylvania legislature established a $1 million Waste Abatement Fund which has been completly allocated as the State's 10% share of cleanup activities for four NPL sites. Although other small sources of funding may exist in the State, the NPL listed 26 other sites in Pennsylvania which may require cost sharing with Superfund for cleanup. Recently, the State DER has sought from the legislature an additional $3 million in matching funds for the period July 1983 - June 1984.

The Commonwealth of Virginia currently has no funds available for its required cost share. Funding for construction activities undertaken at Matthews Electroplating may be provided by the County.

For its cost share, the Delaware Legislature provided the State with bonding authority for $100,000 in 1982. Additional authority is being sought for fiscal year 1983.

The State of West Virginia currently has no appropriation for Superfund remedial cost sharing. The State Legislature is giving consideration to a hazardous waste tax which would provide a source of funding for the State cost share; but, this would not be available until January, 1984 at the earliest.

There is no separate appropriation in the State of Maryland for State cost sharing at Superfund sites. If necessary, some funds may be drawn from the State's operating budget.

The most effective manner to at least partially alleviate this problem and, as a by-product, to improve EPA-State relationships, would be for Headquarters to make a policy change requiring a match only for design/construction funds. This action would free up limited available funds for actual construction.

Emerging Problems

We anticipate one emerging problem in the Superfund program. Some sites which have a real problem, will not rank high enough on the HRS to receive Superfund monies. We can not ignore these sites; thus, enforcement action may be the only solution. Enforcement action, though, implies that there is someone with sufficient funds to enforce against. As we have found often in the past - and used as a justification for Superfund passage - this situation does not always exist.

PESTICIDE PROBLEMS

Environmental Problems

The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), as amended, was implemented to regulate the marketing of pesticide products and devices by means of registration (the devices themselves are exempt from registration) and labeling procedures which require registrants to present evidence of the safety of these pesticide products when used as directed and to be effective for the purpose claimed on the product labels.

FIFRA is the only law that allows the intentional introduction of a toxicant into the environment. Again, by FIFRA regulations, the beneficial effects of these pesticides must outweigh their harmful effects to man and the environment, if used as directed.

Regionally, commercial pest control operators, in residential areas, are the single group contributing to the major number of confirmed mis-use investigations and potential for harm to either man and/or the environment in residential areas. Whether this is a significant factor cannot be determined.

Barriers to the Problem

Under FIFRA, Section 12(a) (2) (G) reads: "It shall be unlawful for any person to use any registered pesticide in a manner inconsistent with its labeling." As interpreted, all pesticide mis-uses are after-the-fact violations.

Management Implications

EPA Headquarters issues program guidance which the regional office requires the States to follow in submission of requests of financial assistance for their pesticide enforcement program. The States must establish enforcement priorities that permit the most efficient use of resources and personnel. The priority setting process enables States to concentrate its training, compliance monitoring and enforcement programs on specific pesticide activities which pose a risk to health or the environment. In setting priorities, States analyze their records of pesticide use complaint investigations and assign harm or potential harm factors to each use violation. The areas of highest harm factors are given the highest priority.

Anticipated results

By the establishment of a base line, it is anticipated that in future years, it can be shown that by concentrating resources in areas of highest priorities, harm or potential harm can be reduced.

Emerging Problems/Issues

States are dedicated to the protection of humans and the environment from adverse effects of pesticides. The only forseeable problem would be the reduction of federal funds available to the States.

RADIATION PROBLEMS

1. Environmental problem

a. The problem

The major activity of the regional office radiation program is review of emergency preparedness plans around nuclear power plants. The Federal Emergency Management Agency (FEMA) has primary responsibility in this function. In addition, the region reviews environmental impact statements, provides technical assistance to the States and keeps the ERAMS system current (ERAMS is a radiation monitoring system which is fully activated when an atmospheric nuclear test is conducted, or some other event that would result in widespread radiation. Some routine sampling is also performed.)

b. Cause of the problem

There are eight nuclear power plants in operation or under construction in Region III. In addition, the ten-mile zone for emergency planning for the Salem nuclear power plant in Region II extends into Delaware.

c. Regional significance

Region III is therefore responsbile for review of plans around nine nuclear power plants. This means that plans must be reviewed for five states and twenty-eight counties and many municipalities within the ten mile zone. Some additional review is conducted to a fifty-mile radius for food and water contamination, but this is not a major part of the review function. Draft plans have been reviewed for all jurisdictions. Final submittals have been received from several states.

2. Barriers to solution of the problem

There are no significant barriers from an EPA perspective.

3. Management implications

Once State and county radiological emergency plans are in place and during their development, the plans must be tested. Each nuclear facility, each State and each county must participate in a full-scale exercise at least once per year. Region III supplies an observer as part of the exercise procedure.

4. Anticipated results

The specialized expertise of the radiation representative is used in this case to assure that monitoring and projected dose calculations are performed correctly. Nine full-scale exercises are performed in Region III each year.

The attached map shows the location of nuclear power plants in Region III and the Canonsburg inactive uranium mill tailings site.

1. Environmental problem

Cleanup of the Canonsburg inactive uranium mill tailings site.

a. The problem

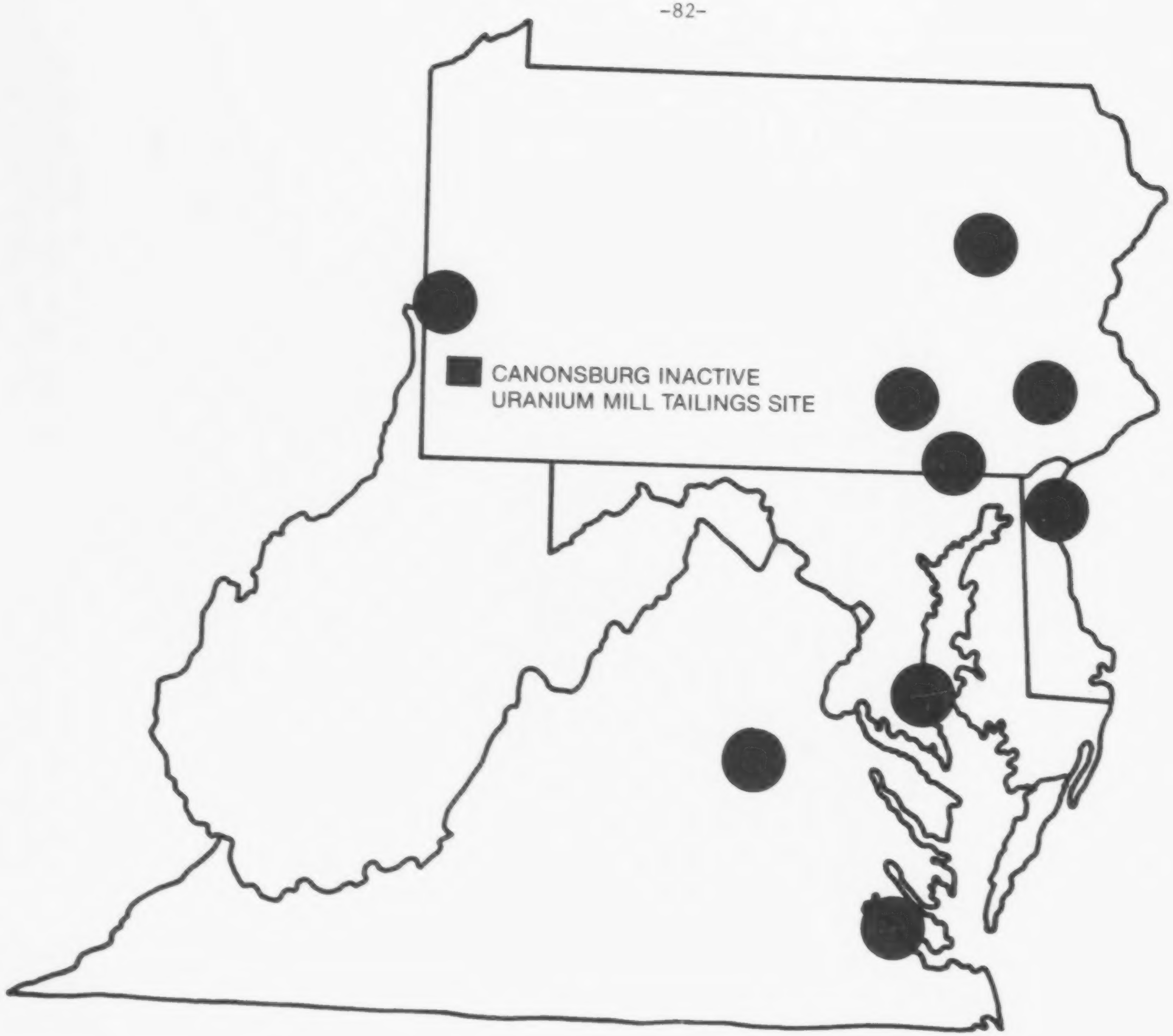
In Canonsburg, Pennsylvania, a major inactive uranium mill tailings site is about to be stabilized under the Uranium Mill Tailings Radiation Control Act of 1978. (UMTRCA)

b. Cause of the problem

The Canonsburg site is located within the Borough of Canonsburg, Washington County, in southwestern Pennsylvania. It lies approximately 20 miles southwest of downtown Pittsburgh. The former Vitro Rare Metals Plant property (18.5 acres), now the Canon Industrial Park, is the site area designated by the UMTRCA as containing the radioactivity-contaminated material. The former Vitro property is divided by Strabane Avenue and Ward Street into three separate areas. The only developed area and contains the existing Canon Industrial Park buildings. The other areas are open areas along Chartiers Creek. Two other areas of the expanded site adjacent to the Canon Industrial Park, i.e., the former Georges Pottery property (6.1 acres) and the seven residences situated on Wilson Avenue and George Street (5.4 acres), are needed to complete some of the remedial-action alternatives (on-site stabilization). The expanded 30-acre site is bounded by Chartiers Creek to the north, west, and east, and by the ConRail right-of-way to the south. The expanded site is located in a densely developed urban area; e.g., across the ConRail tracks there are residences as close as 250 feet to the site.

From 1942 through 1957 the Virto Manufacturing Company (Vitro), and its successor, the Virto Corporation of Amercia, owned and operated the palnt on the Canonsburg site, which was used to process on-site (contractor-owned) residues and ores, and government-owned ores, concentrates, and scrap, to extract uranium and other rare metals. During this time various ores, concentrates, and scrap materials were brought from different AEC installations to the Canonsburg site for uranium recovery. The end products of these processes were delivered to the Atomic Energy Commission (formerly the Manhatten Engineer District) in accordance with terms of government procurement contracts. All solid process wastes were stored temporarily on the site. Liquid wastes were discharged into a swamp in Area C, which drained to Chartiers Creek. This swamp has since been filled in.

In late 1956 to early 1957 about 11,600 tons of wet material containing approximately 6 tons of uranium oxide were taken to the Burrell site, a Pennsylvania Railroad landfill in Burrell Township,


■ CANONSBURG INACTIVE
URANIUM MILL TAILINGS SITE

NUCLEAR POWER PLANTS IN REGION III

With 10-mile planning zone

Indiana County, about 51 miles northeast of Canonsburg. The Burrell site covers approximtely 49 acres; it is an undeveloped plateau along a bend of the Conemaugh River at the southern boundary of Indiana County in southwestern Pennsylvania. Its only significant surface features are three steep-banked ponds in the western area that are remnants of an old disposal pit. Disposal of the 11,600 tons of material removed from the Canonsburg site took place within a 9-acre section in the western portion of the Burrell site. The residues were brough in by railcar, dumped into the disposal pit, and covered with an uneven layer of uncontaminated material.

In 1962 Virto's real property was sold to developers, with Vitro retaining title to the remaining radioactive material. In an effort to decontaminate the immediate plant area, in 1964 all the materials then considered contaminated were consolidated into one pile in Area A. This pile was eventually moved to Area C in 1965 and buried beneath a relatively impermeable layer of steel-mill slag. Vitro's source-material license was then terminated, and the Vitro property was developed into its present use as the Canon Industrial Park.

c. Regional significance

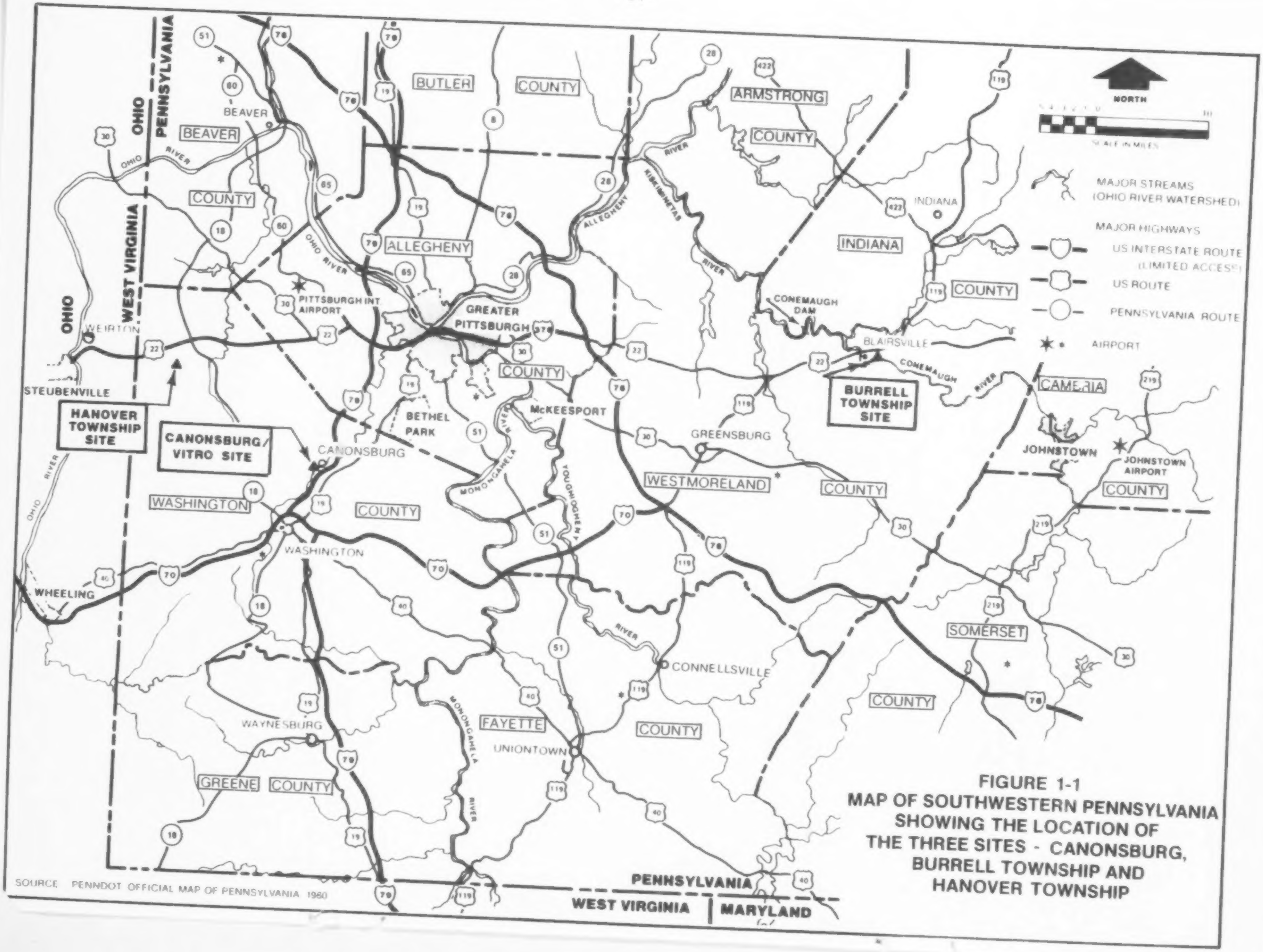
The Canonsburg site is the first inactive uranium mill tailings site scheduled for cleanup by DOE. It will therefore set the precedent for other cleanup actions in other parts of the nation. It is therefore necessary that particular care be exercised in assuring that the cleanup is planned and conducted in compliance with EPA's standards for remedial action. A major part ot this action has been review of the EIS, in which Region III was assisted by Headquarters and laboratory components of EPA and by Region VIII.

d. Trends

In the absence of a cleanup activity, the trend would be a continuation of the current problem. This consists of excessive public exposures to radon gas from the tailings and contamination of groundwater and surface waters from radionuclides in the waste materials. In the absence of any regulation, the problem would worsen because the tailings are an attractive material for use as fill (except for its radiological hazards). Left uncontrolled, human activity could aggrevate the problem by removing material from the site for other uses.

2. Barriers to solution of the problem

With the promulgation of final EPA cleanup standards and review of the EIS, all barriers to solution existing in EPA have been removed. The only potential barrier existing at this time is some interest on the part of a small number of Congressmen in diverting the cleanup funds for other uses.


NORTH
SCALE IN MILES
MAJOR STREAMS (OHIO RIVER WATERSHED)
MAJOR HIGHWAYS
US INTERSTATE ROUTE (LIMITED ACCESS)
US ROUTE
PENNSYLVANIA ROUTE
AIRPORT
OHIO
PENNSYLVANIA
WEST VIRGINIA
MARYLAND
BEAVER
BEAVER COUNTY
BUTLER COUNTY
ARMSTRONG COUNTY
INDIANA
INDIANA COUNTY
ALLEGHENY COUNTY
WESTMORELAND COUNTY
CAMBRIA COUNTY
WASHINGTON COUNTY
FAYETTE COUNTY
GREENE COUNTY
SOMERSET COUNTY
WEIRTON
STEUBENVILLE
WHEELING
HANOVER TOWNSHIP SITE
CANONSBURG/ VITRO SITE
BURRELL TOWNSHIP SITE
PITTSBURGH INT. AIRPORT
GREATER PITTSBURGH
BETHEL PARK
CANONSBURG
WASHINGTON
WAYNESBURG
McKEESPORT
GREENSBURG
CONNELLSVILLE
UNIONTOWN
BLAIRSVILLE
CONEMAUGH DAM
JOHNSTOWN
JOHNSTOWN AIRPORT
OHIO RIVER
ALLEGHENY
KISKIMINETAS RIVER
CONEMAUGH RIVER
MONONGAHELA RIVER
YOUGHIOGHENY RIVER
51
60
30
18
65
79
76
19
8
28
422
119
22
279
70
40
219

SOURCE PENNDOT OFFICIAL MAP OF PENNSYLVANIA 1980

FIGURE 1-1
MAP OF SOUTHWESTERN PENNSYLVANIA SHOWING THE LOCATION OF THE THREE SITES - CANONSBURG, BURRELL TOWNSHIP AND HANOVER TOWNSHIP

3. Management implications

a. Regional actions

(1) EPA

Since the cleanup is a DOE responsibility, there is little involvement on the part of Regional management. Review of the EIS has been one of our major roles. A future decision will have to be made as to the extent of EPA monitoring of the cleanup operation itself.

(2) State

Pennsylvania is involved in the cleanup effort because, by law, 10% of the cleanup funds have to be provided by the State. The State is expending this share of the cleanup cost mostly in aquisition of the affected properties. EPA is not directly involved in this process.

b. Headquarters Actions

The main EPA Headquarters actions on this problem have already been performed. These are promulgation of the cleanup standards and assisting in review of the EIS.

4. Anticipated Results

The anticipated result will be the long-term stabilization of the Canonsburg site and therefore the removal of any threat to public health from contaminated material. This is to be accomplished by the Department of Energy.

EMERGING ISSUES - RADIATION

1. Indoor Radon

Recent changes in construction and insulation techniques in response to the high cost of energy have caused the problem of indoor radon to surface. Radon is a natural product of uranium-bearing soils and would not be a problem except for the tight weather sealing on modern homes which limits ventilation. Recent articles in newspapers and the popular press have caused increased public interest in the problem. Since most soils contain some uranium, it is impossible to tell whether a house contains excessive radon levels without making a measurement. This is therefore not a problem that can be easily dismissed when an inquiry is received. (In comparison, most inquiries on non-ionizing radiation can be easily evaluated by telephone.)

Since the indoor radon problem is probably much more pervasive than we now realize (for lack of measurements), there is a strong likelihood that large numbers of people are exposed to excessive radon levels without anyone knowing it. Two actions from headquarters are needed on this problem: 1) develop an inexpensive and rapid survey method to be used in field studies, 2) conduct a survey of indoor radon levels thoughout the U.S. This would then identify the true scope of the problem which we do not now know. Does the problem affect 100, 1000, 10,000 or 100,000 residences?

2. Non-ionizing Radiation

Since publication of The Zapping of America and several other articles in the popular press, there has been a small but constant flow of telephone calls on non-ionizing radiation. Most can be answered relatively easily by doing a simple calculation or informing people that microwave communication towers operate at very low power levels even though the horn antennas look imposing. However there are some persistent individuals who refuse to be swayed by logic and in other cases there is a real possibility of excessive exposure. Thus non-ionizing radiation represents a small but constant workload for the region.

Our needs from headquarters is a continuation of the work that is being carried on by ORP on the subject. The level of support to date has been satisfactory.

3. Uranium Mining in Virginia

There is a likelihood that uranium mining will begin in southern Virginia. Since this activity is covered under the proposed emission standard for radionuclides, it will be necessary for EPA to become involved to enforce the emission standard when it is promulgated in final form. This could become a significant part of the radiation program workload.

4. Decommissioning of the Shippingport Nuclear Power Station

In the next few years, the Shippingport nuclear power station (one of the first in the nation) is scheduled to be decommissioned. This will mean removing the spent fuel in the core, disassembling the reactor and disposing of the waste material. This presents a number of difficulties: There is no disposal facility available for the spent fuel, so it will have to be stored until such a facility becomes available. There are only three disposal sites for the low-level waste, none in Pennsylvania. The radioactive materials in the structure and the reactor will therefore have to be shipped out of state for disposal. The Department of Energy is responsible for the decommissioning.

FEDERAL FACILITIES

GENERAL

Based on GSA inventory records, there are 2,214 Federal Facilities in Region III. These facilities encompass 4,496,062 land acres. There are 40,191 buildings located on this land area with the total value of both land and buildings of $11.44 billion. Over 25 percent of the total civilian government workforce resides in the region and over 95 percent of all governmental "command" or Headquarters offices are located within the region.

Regarding Pollution Abatement, there are currently 503 active pollution abatement projects ongoing at various federal facilities in Region III. When completed, these projects will be valued at $661,785,400.00. These costs represent over 25 percent of the total National Federal Pollution Abatement Budget of $2.3 billion.

AIR SOURCES

There are 144 major (100 ton per year potential) sources in Region III. The number of minor sources, conservatively estimated could number in the thousands. Only five major sources are known to be out of compliance and each is operating under an acceptable abatement schedule. The most current records indicate that 48.6 percent of these sources have been inspected.

NPDES SOURCES

There are currently 256 NPDES applications on file. Based on our records 31.6 percent are out of compliance with their permit conditions, 25.6 percent are in compliance with their permit conditions and 32.8 percent are of unknown compliance status. The reason for this last category being so high is due to delegation of the federal facility permit issuance authority to several of our States where they are not required to report to EPA on minor sources. This should be corrected because of our overview responsibility for federal facilities. Also, a large number of these facilities are currently operating under expired permits. The delegated States as well as regional permits staff should be encouraged to give re-issuance of these permits a high priority.

RCRA SOURCES

There are currently 36 federal facilities that have submitted Part "A" RCRA applications. As of April 1, 1983, ten federal facilities had a RCRA inspection conducted with two reported as having violations. Corrective actions are being taken.

As the review process proceeds, more facilities will be inspected and evaluated with regard to their need for a permit. This review process will be conducted in the same manner as for the non-federal facilities (i.e. as they come up on the list).

"SUPERFUND" SITES

Responsibility for investigation, study and clean-up of DoD "Superfund" sites has been delegated by the President to DoD (Executive Order (EO 12316). Under EO 12316 EPA will play predominately an "advisory" role. The Region has however, a very good working relationship with DoD in this matter. The DoD has an ongoing Installation Restoration (IR) program. This program has 4 phases.

PHASE I - Installation Assessment. File reviews, interviews of current and key former employees, assessment of terrain, hydrogeology and past and present waste disposal practices are reviewed. Twenty-three Phase I studies have been completed in Region III.

PHASE II - Confirmation Phase. A comprehensive survey is conducted to fully define the facility's problems through environmental sampling and analysis. Eleven Phase II studies are ongoing in Region III.

PHASE III - Technology Base Development. If control technologies do not exist, they are developed at this phase. No Region III installations require a Phase III study at this time.

PHASE IV - Operations Phase. This phase includes design, construction and operation of pollution abatement facilities, and the completion of remedial actions. As of this date, no Phase IV studies have been initiated.

As the reports in the various installations are completed, they are provided to the Region for our review. At that time if additional data is requested by EPA, it will be provided to EPA by DoD as soon as is practicable. It is hoped that sharing this information will eliminate duplication of effort and serve to be the most cost effective procedure for both EPA and DoD. Any remedial actions determined to be necessary by DoD will be coordinated with both EPA and the effected State organization.

Appendix A.

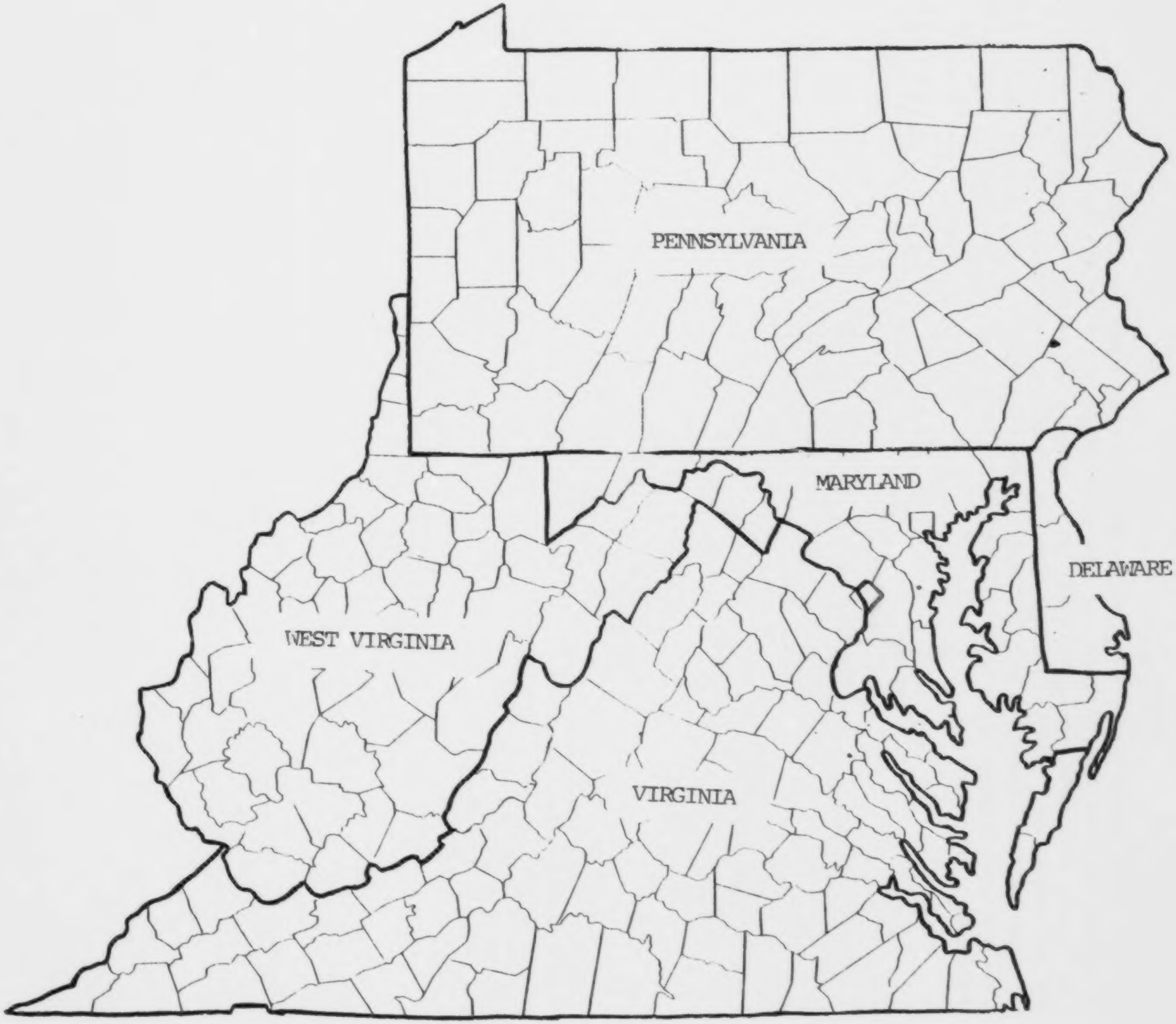
Supporting Documentation

Introduction

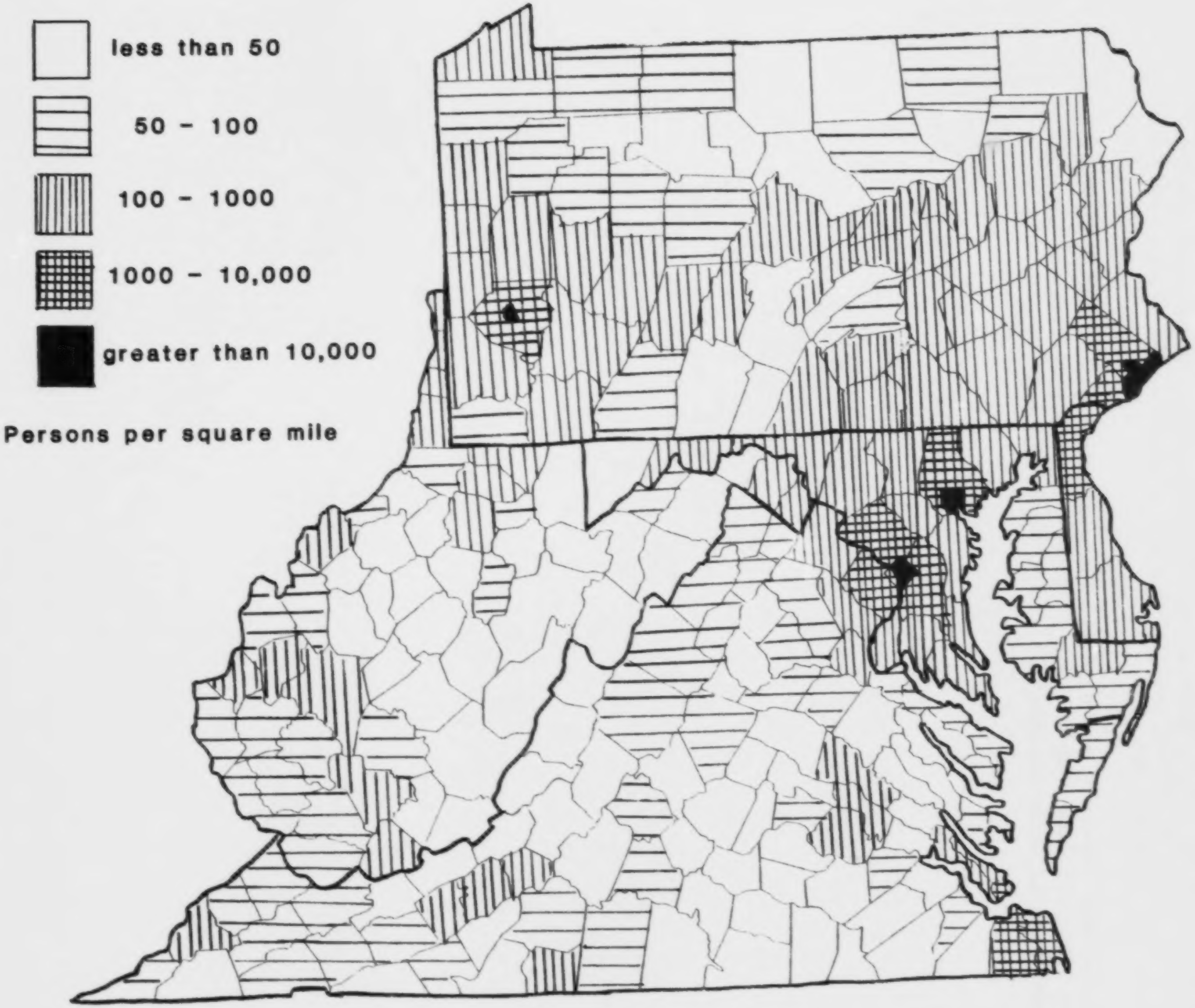
Appendix "A" contains the supporting documentation for the material presented in the main report. This information is presented in a media-by-media format.

AIR QUALITY PROBLEMS

The following chart gives population densities in counties in Region III. By comparing this map to those of non-attainment areas it may be seen that Population correlates well with TSP point source emissions and somewhat with SO_2 emissions and ozone planning counties. Actual non-attainmnt problems (as opposed to emissions) for TSP and SO_2 do not seem to correlate as well with population density. This reflects a different mix of sources in highly populated urban areas.


PENNSYLVANIA
MARYLAND
DELAWARE
WEST VIRGINIA
VIRGINIA

MAP OF REGION III WITH COUNTY BOUNDARIES

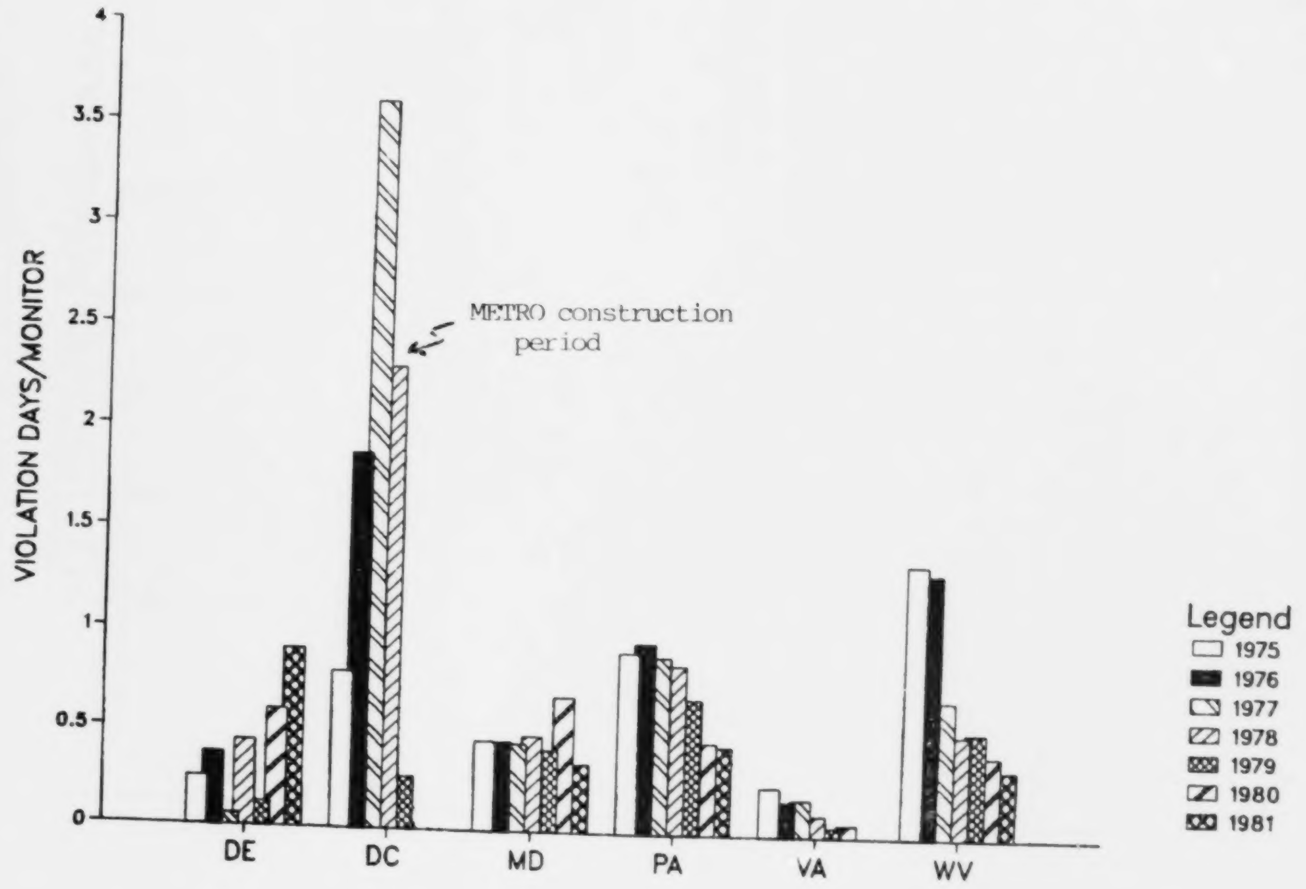

less than 50
50 - 100
100 - 1000
1000 - 10,000
greater than 10,000
Persons per square mile

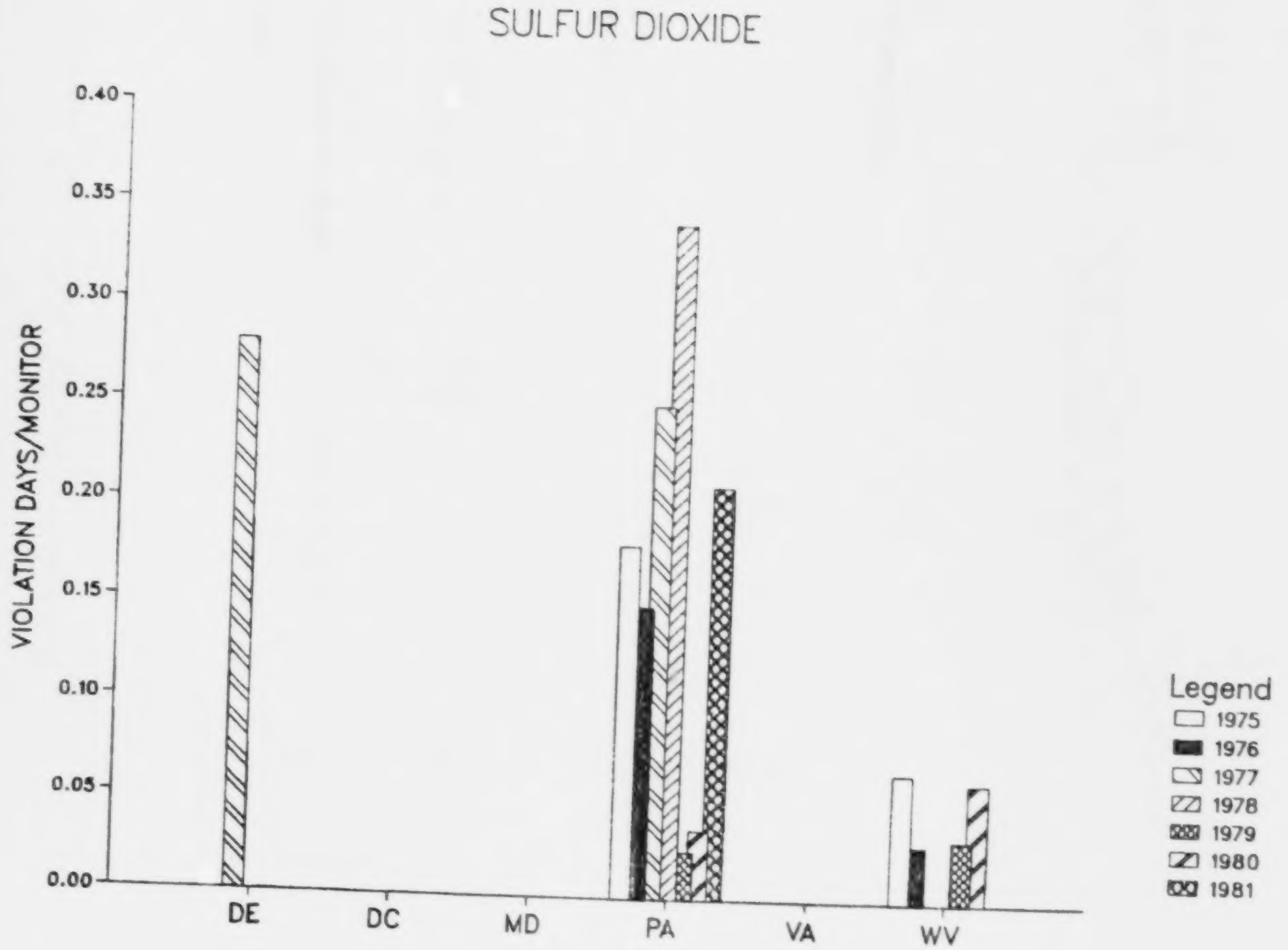
POPULATION DENSITY 1980

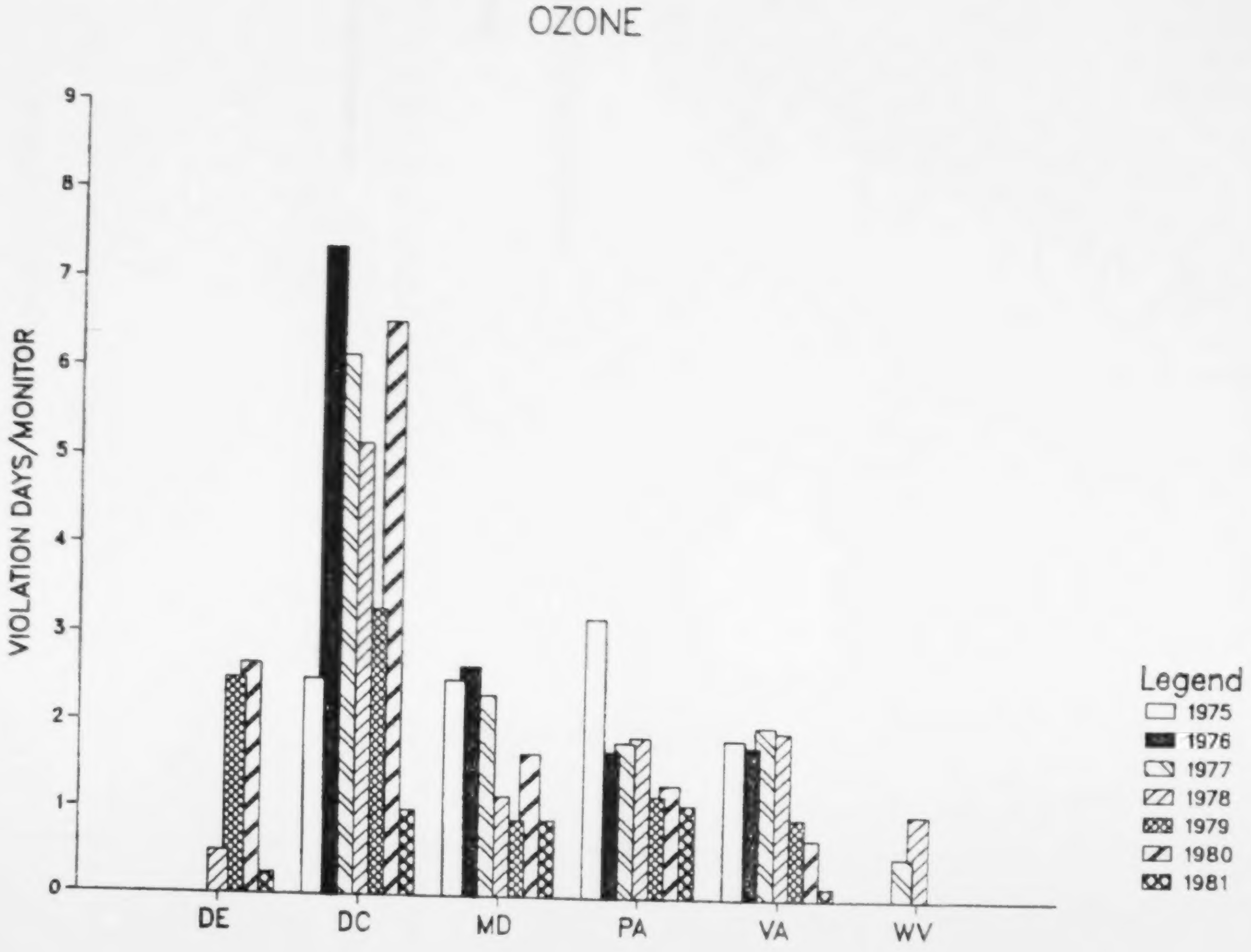
The following charts give NAAQS violation days as a percentage of total monitors operating in a State. A violation day is defined as any measurement within the state boundry that exceeds NAAQ Standards. If more than one monitor within the State exceeds a standard on the same day it is considered only one violation day. This procedure allows trends to emerge despite a change in the number of monitors with time and differences from state to state. Each State is charted separately. Where a bar does not appear, no violation of the standard was measured. The charts give data from 1975 through 1981.

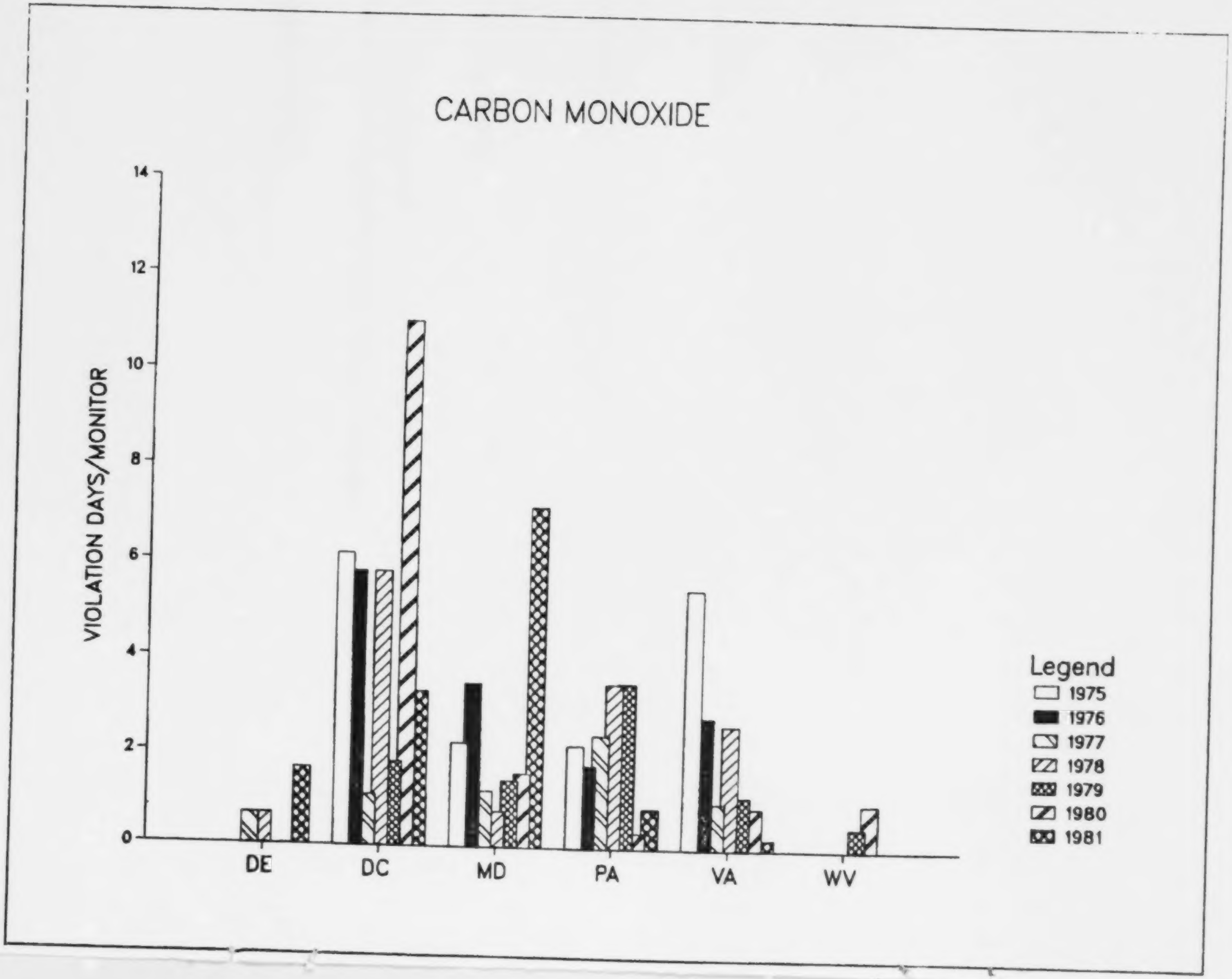
These maps represent standards violations or air quality problems indicated by 1980-1981 data. The do not necessarily correspond with the official designations under section 107 of the Clean Air Act.

TOTAL SUSPENDED PARTICULATE



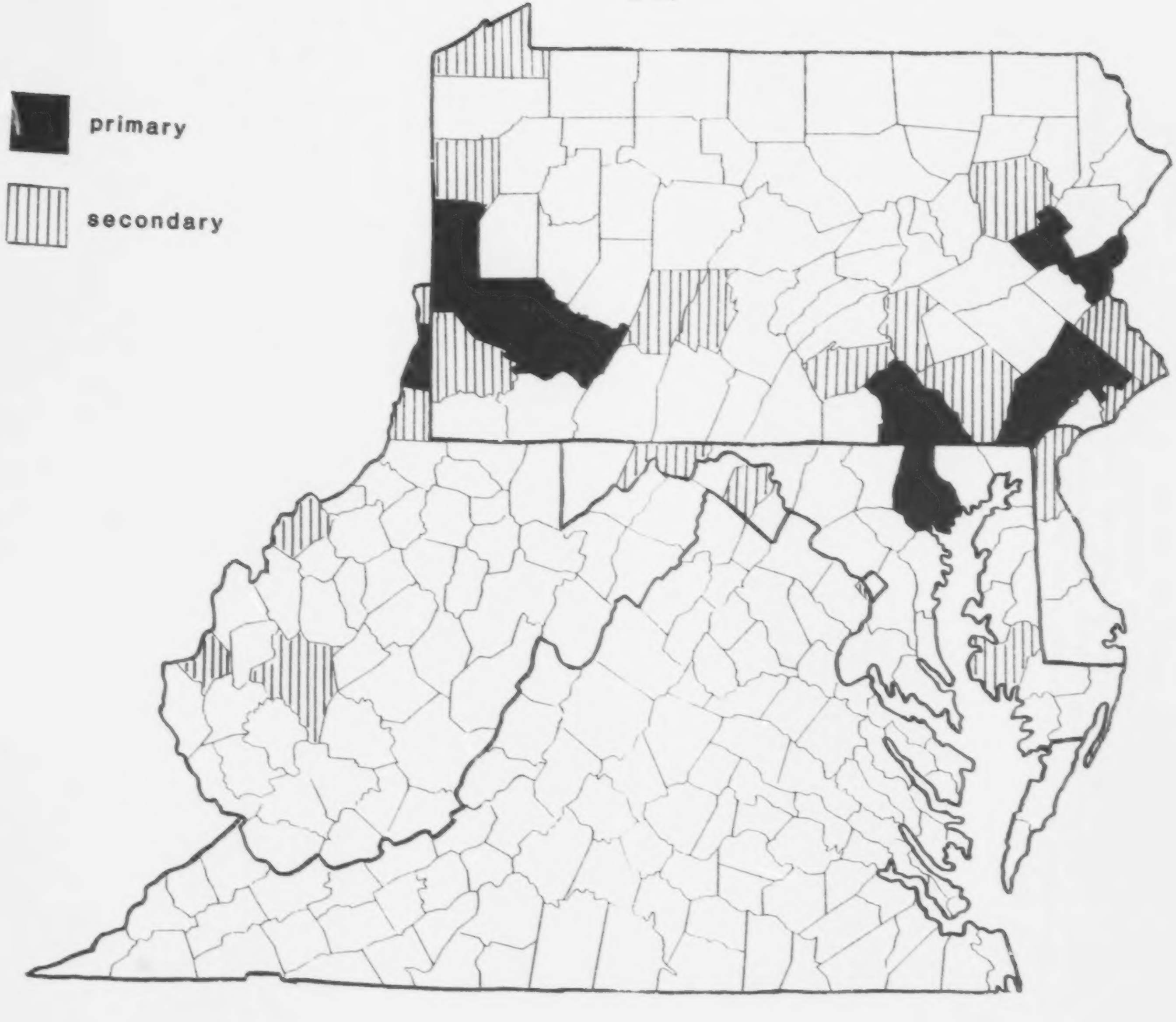

SULFUR DIOXIDE
VIOLATION DAYS/MONITOR
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
DE
DC
MD
PA
VA
WV
Legend
1975
1976
1977
1978
1979
1980
1981


OZONE
VIOLATION DAYS/MONITOR
0
1
2
3
4
5
6
7
8
9
DE
DC
MD
PA
VA
WV
Legend
1975
1976
1977
1978
1979
1980
1981

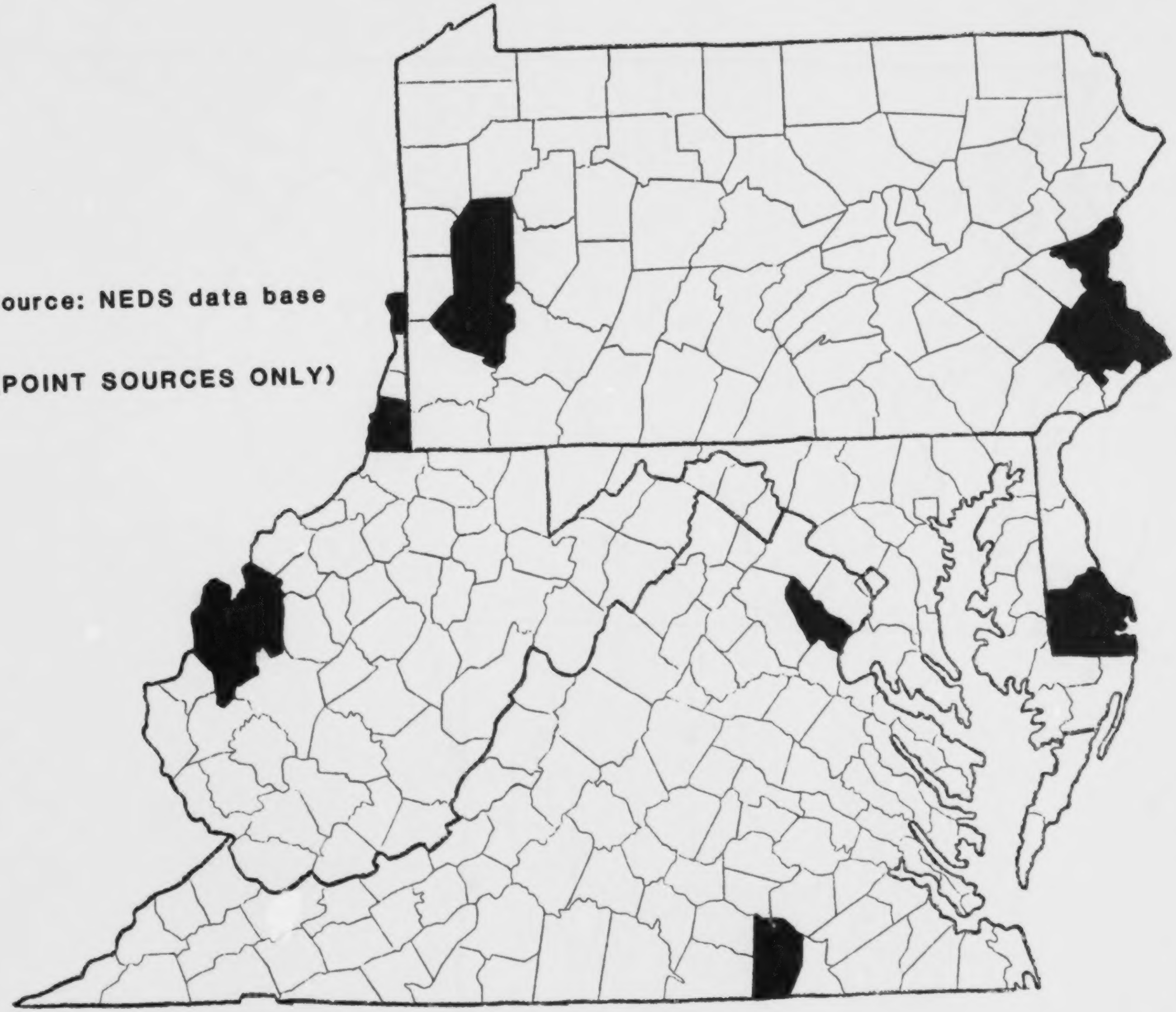


CARBON MONOXIDE

The following maps show the attainment status by county of Region III . Companion charts of emission and the location of steel-making sources are included for comparative purposes. It can be seen that the TSP non-attainment areas correlate remarkably well with steel-producing activities but not well with TSP point source emissions. This gives a graphic indication of the ambient problems associated with the steel industry. For SO_2, it can be seen that high emission density does not necessarily lead to NAAQS violations because of the effect of stack height and source distribution within the counties. SO_2 sources do not tend to cluster together as do sources of particulates in the steel-making industry. Ozone planning counties generally reflect areas of high emissions of non-methane hydrocarbons while CO problems follow from areas of high traffic density.


■ primary
▥ secondary

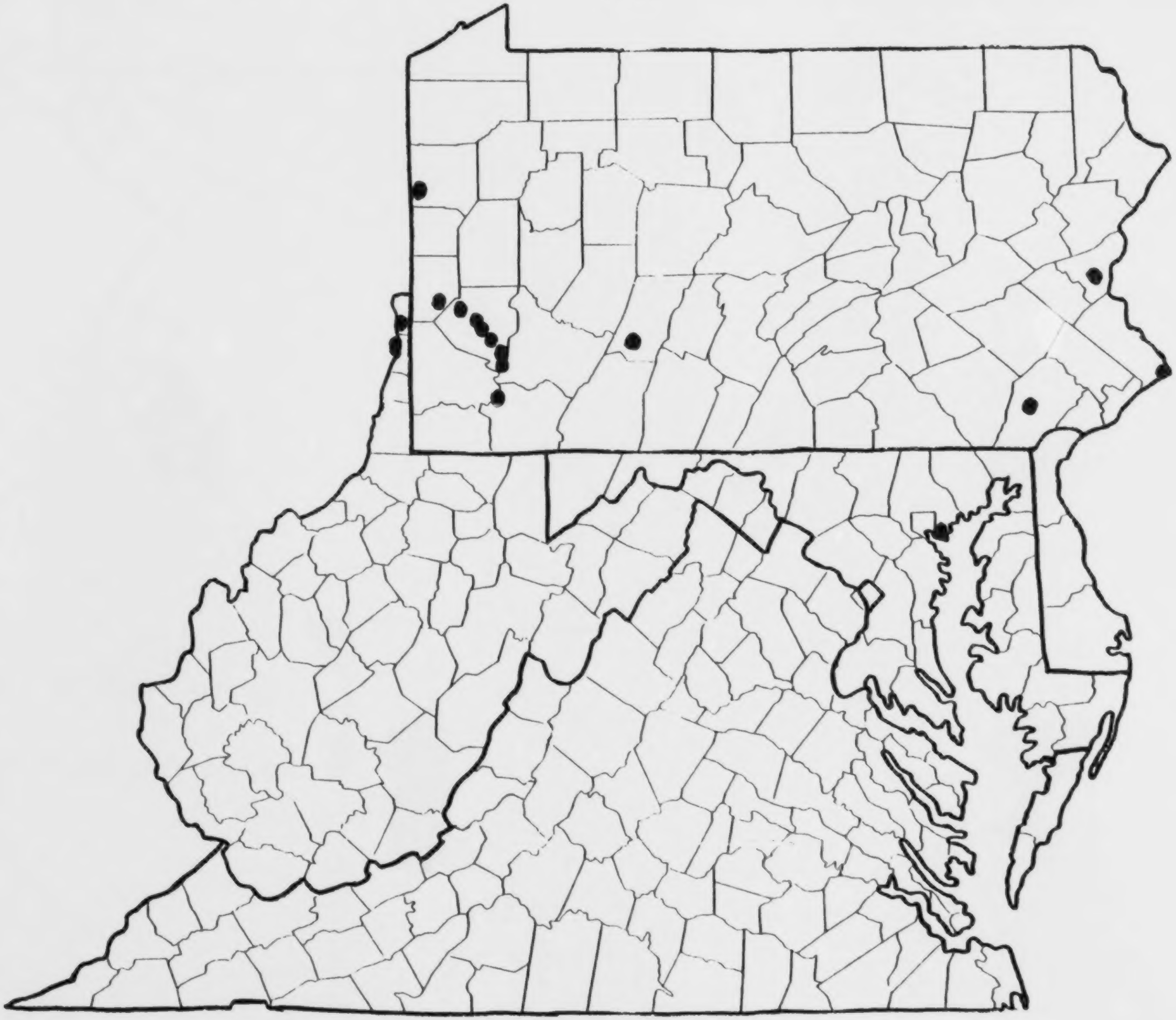
Counties with violations of the NAAQS for particulate in 1980-1981



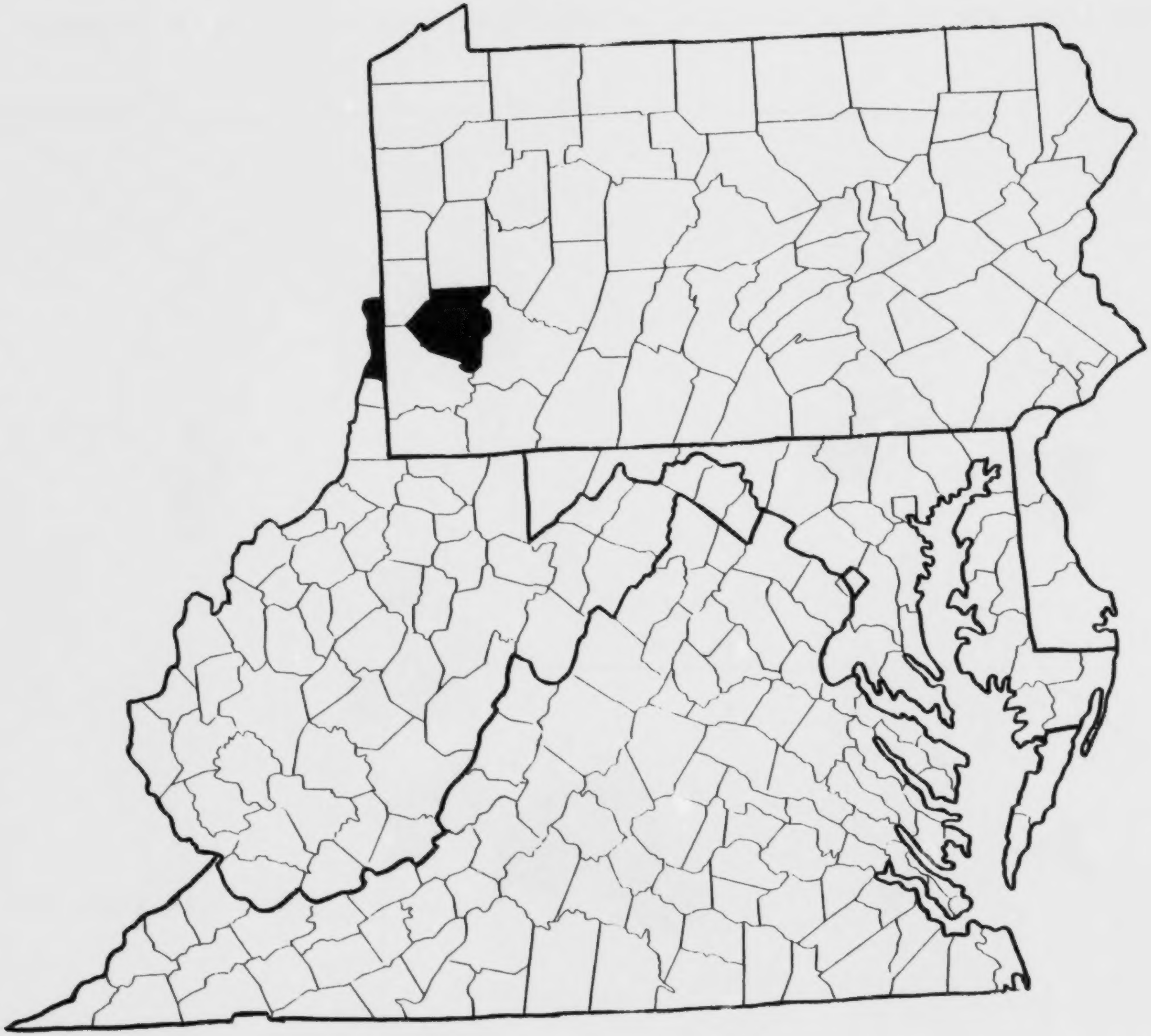
Source: NEDS data base

(POINT SOURCES ONLY)

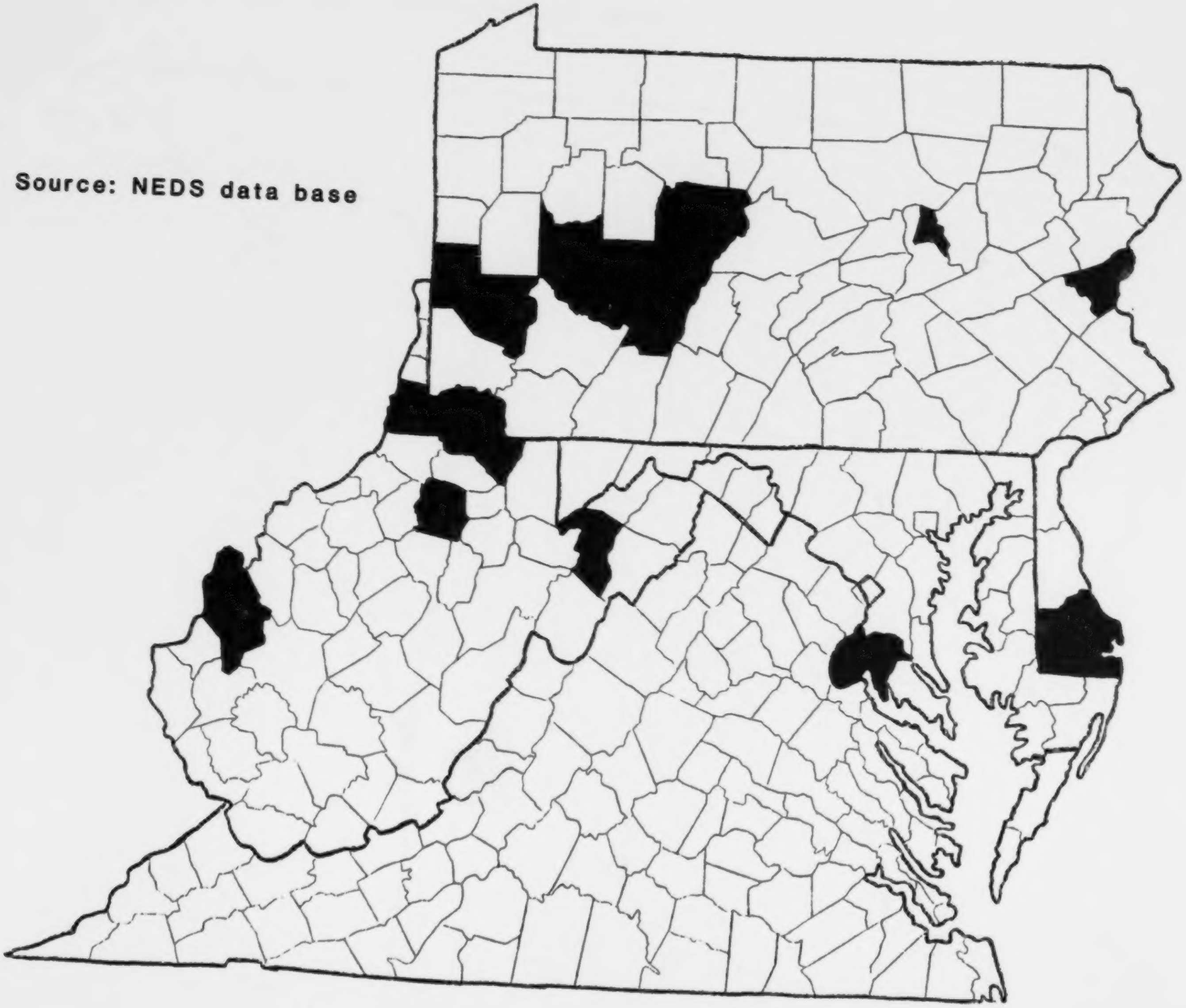
COUNTIES WITH TOTAL SUSPENDED PARTICULATE EMISSIONS GREATER THAN 10,000 TONS PER YEAR



REGION III STEEL PLANT LOCATIONS

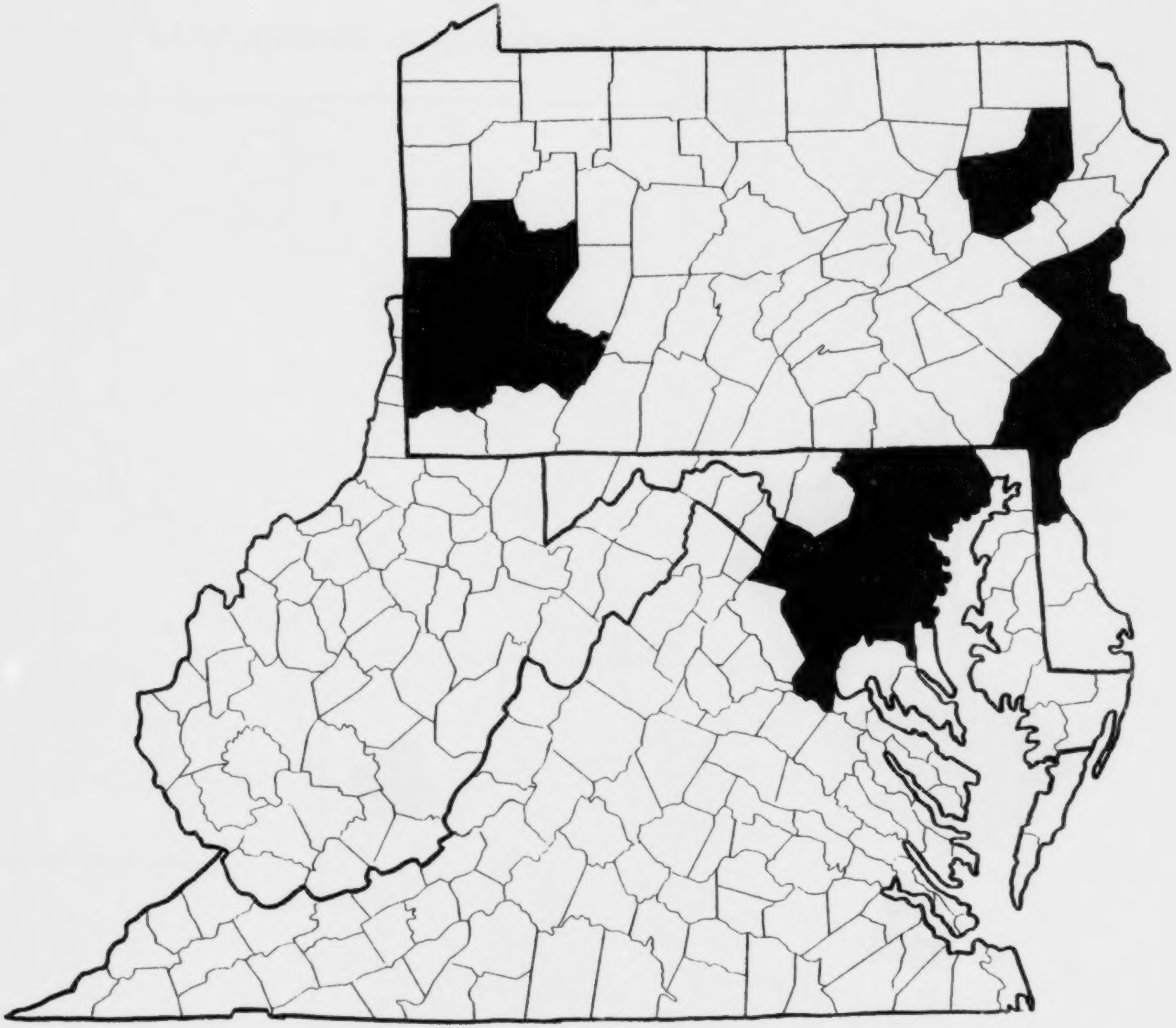


Counties with violations of the NAAQS for sulfur dioxide in 1980–1981

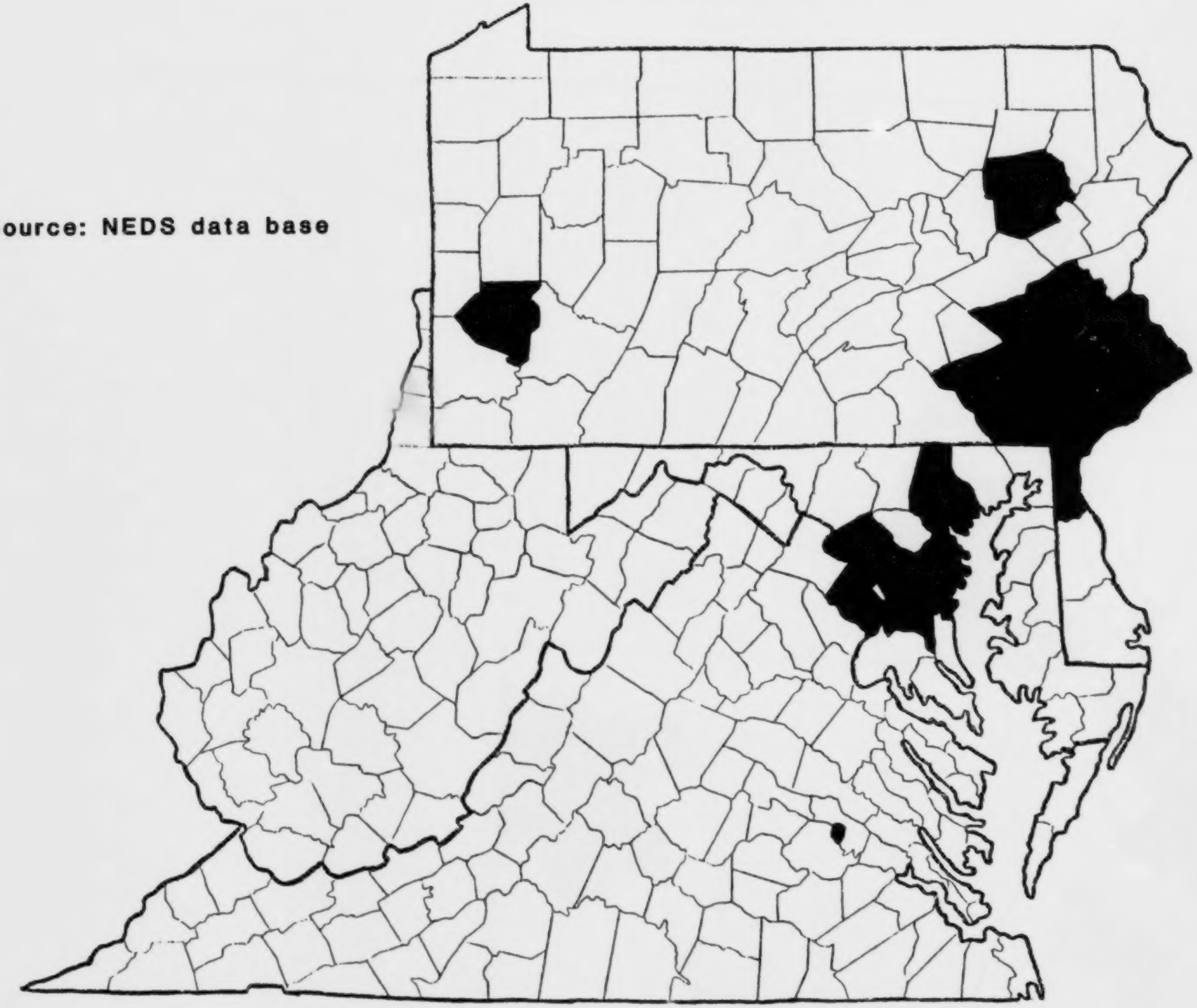


Source: NEDS data base

COUNTIES WITH SULFUR DIOXIDE EMISSIONS GREATER THAN 50,000 TONS PER YEAR

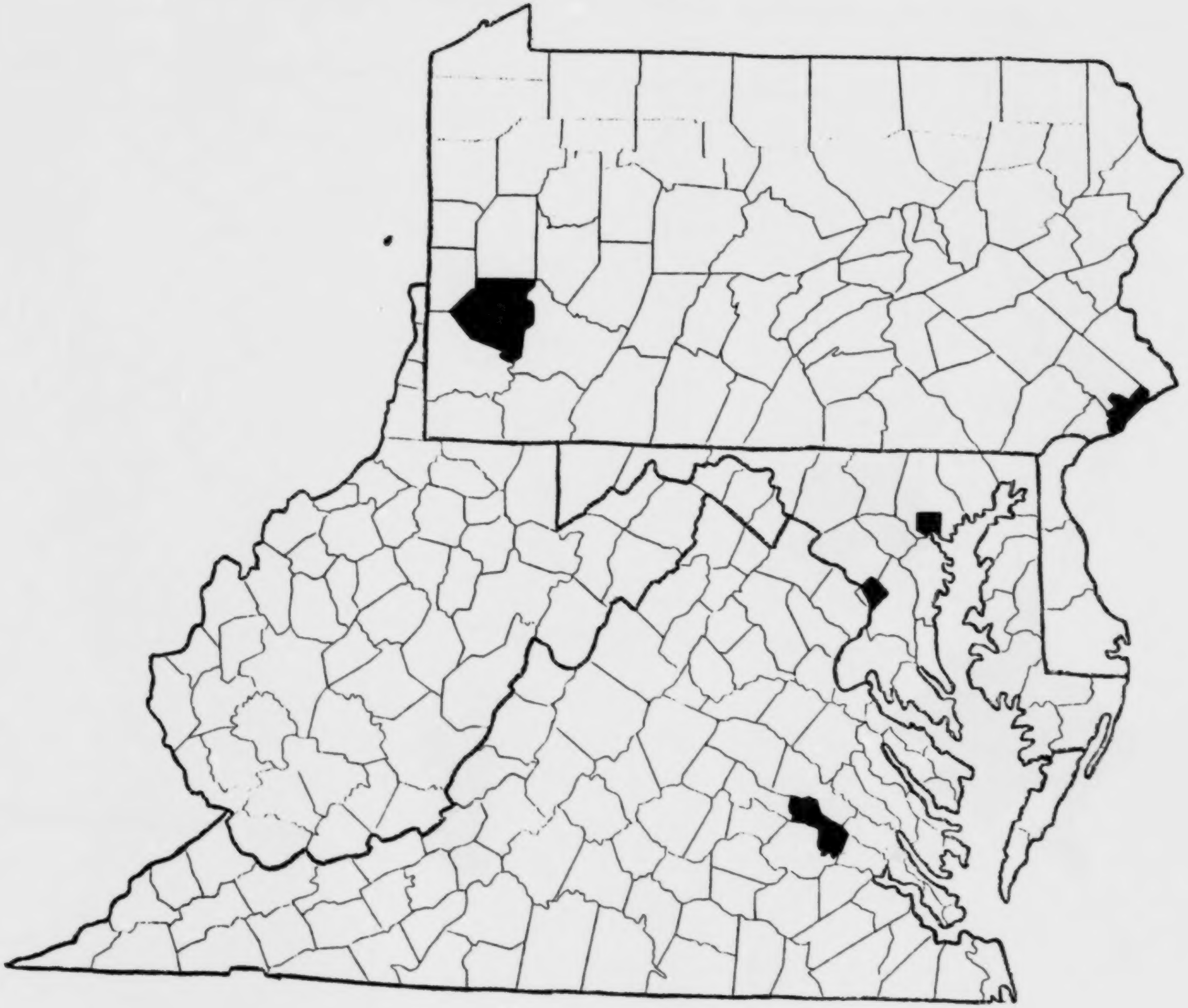


OZONE PLANNING COUNTIES

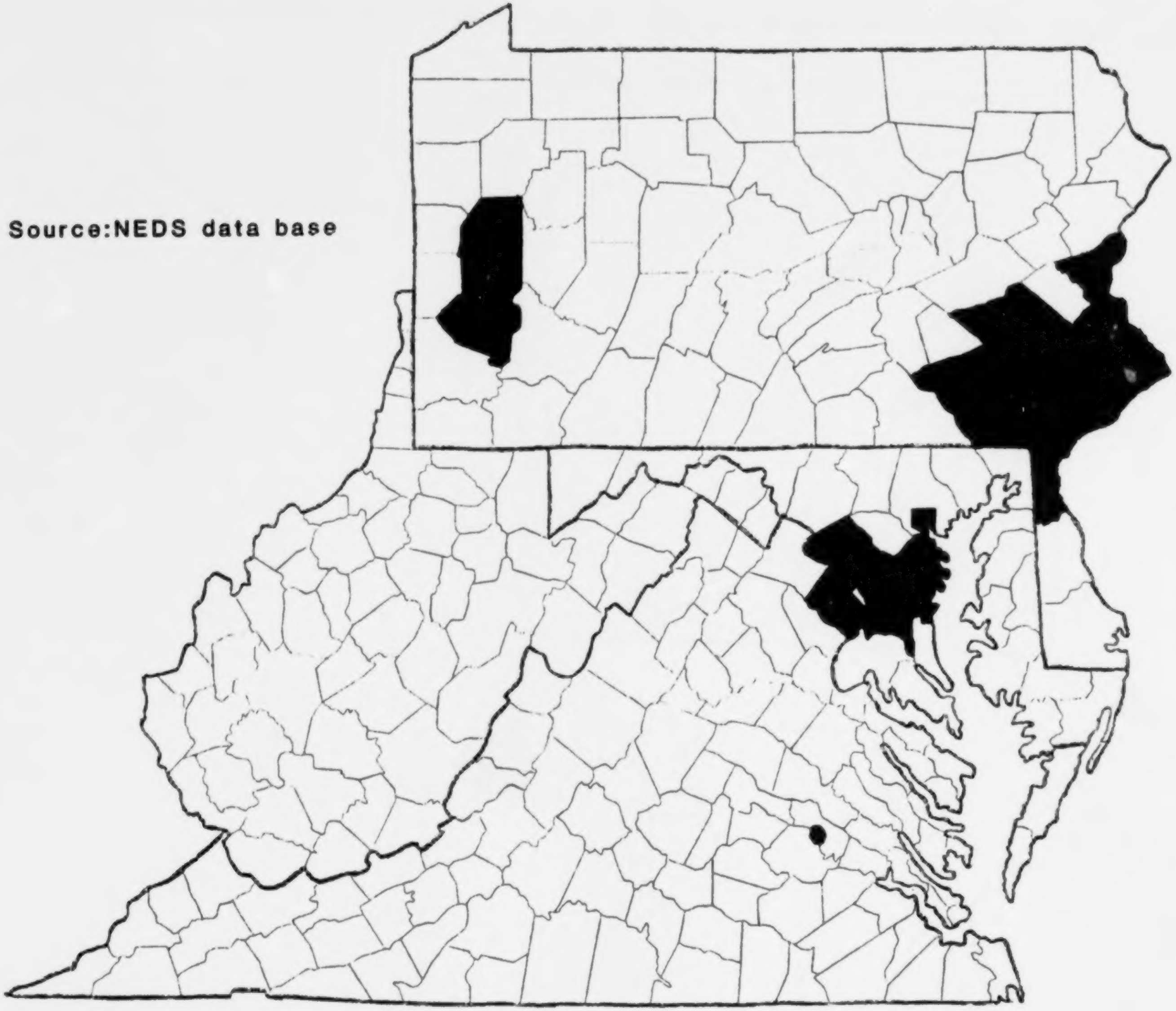


Source: NEDS data base

COUNTIES WITH VOLATILE ORGANIC COMPOUND EMISSIONS GREATER THAN 25,000 TONS PER YEAR

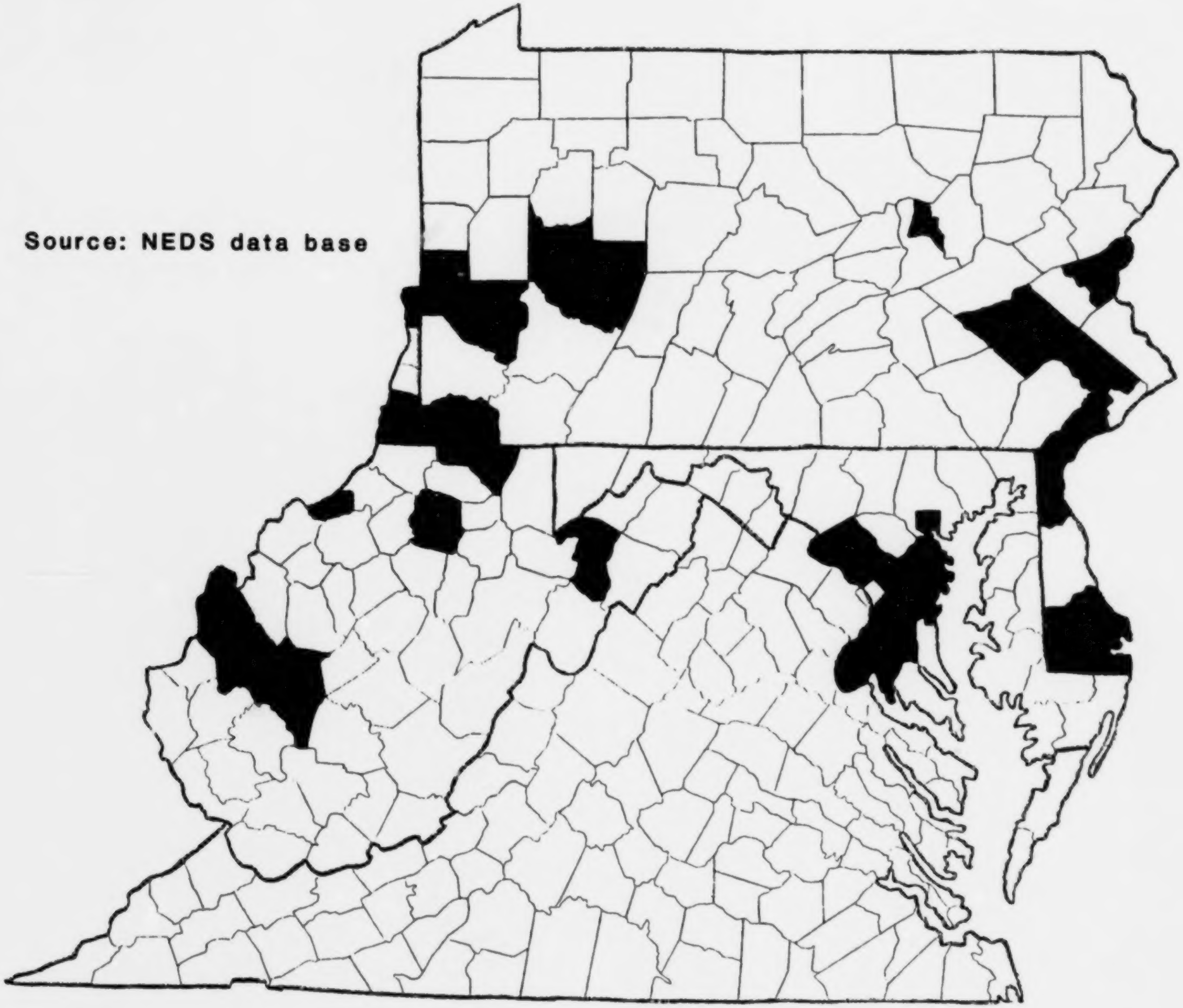


Counties with violations of the NAAQS for carbon monoxide in 1980-1981



Source:NEDS data base

COUNTIES WITH CARBON MONOXIDE EMISSIONS GREATER THAN 100,000 TONS PER YEAR



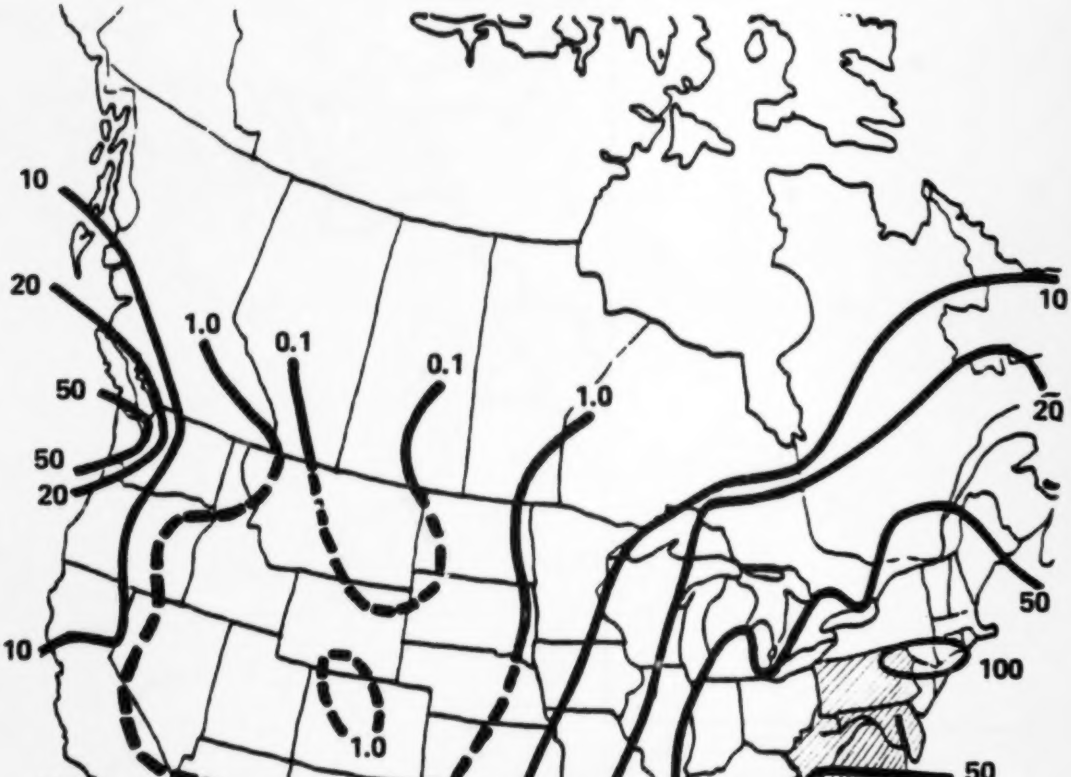
Source: NEDS data base

COUNTIES WITH OXIDES OF NITROGEN EMISSIONS GREATER THAN 25,000 TONS PER YEAR

The following maps show the present and planned acid rain monitoring network in Region III. In addition, a national map of acid deposition shows the national hot spot to be in Regions II and III. This necessitates continued attention to the problem by the regional office.

Mean Annual Acid Deposition in
Precipitation for Period 1976-1979

(Deposition values are
derived from mean pH and
mean annual precipitation)

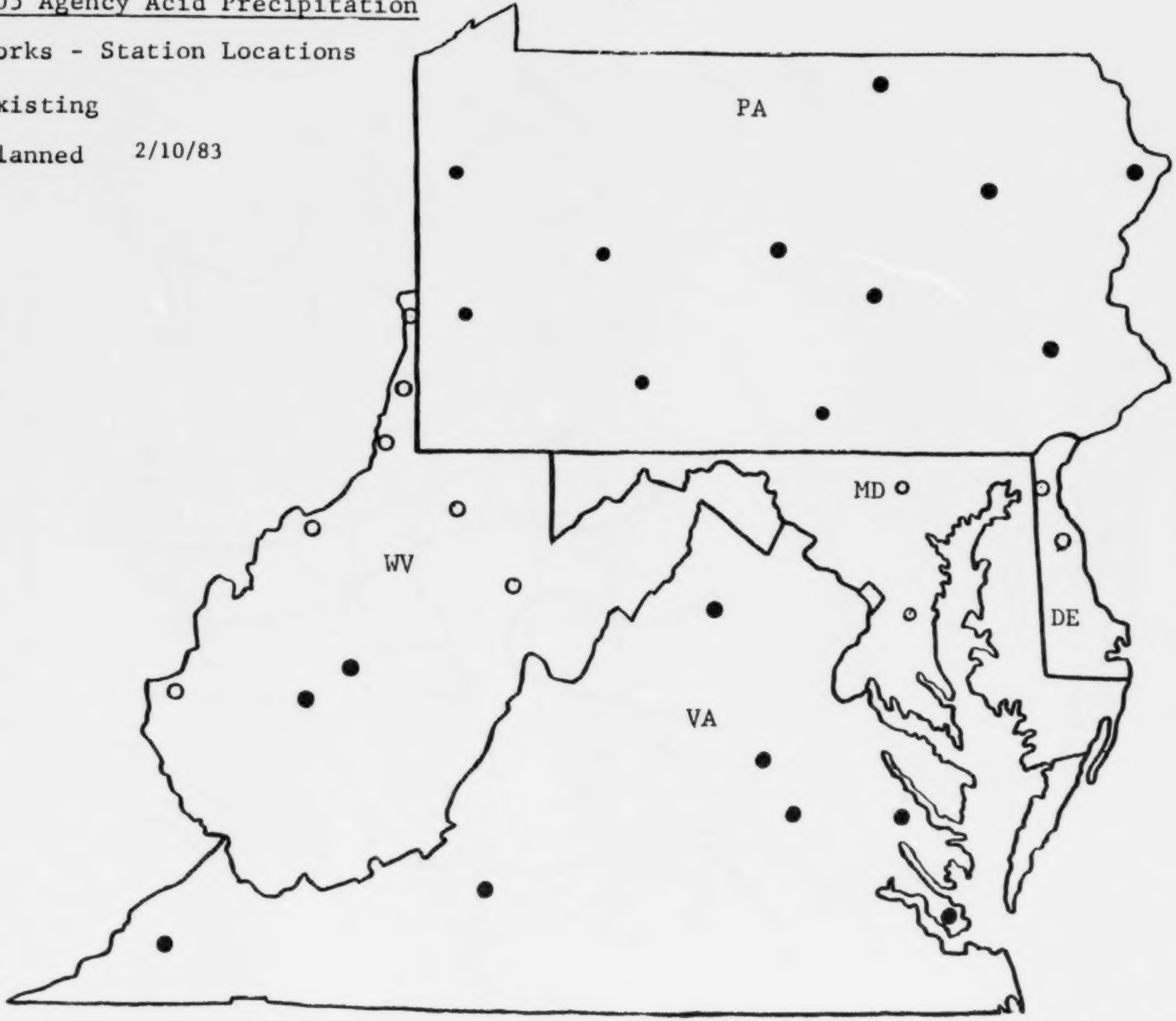

10
20
50
50
20
10
10
1.0
0.1
0.1
1.0
1.0
10
1.0
1.0
20
10
20
50
100
50
20
10
20
10
10
20

Source: February 1981 Interim
Reports by Work Groups under
U.S.-Canada Memorandum of Intent
on Transboundary Air Pollution,
Work Group 1, p. 3-9, and Work
Group 2, p. 6-4.

State 105 Agency Acid Precipitation

Networks - Station Locations

- ● Existing
- ○ Planned 2/10/83


PA
MD
DE
WV
VA

The following chart gives information on the number of schools affected by the asbestos-in-schools program. It can be seen that a large number of schools are involved and that tracking is difficult for lack of a reporting requirement.

ASBESTOS-IN-SCHOOLS PROGRAM

	DC	DE	MD	PA	VA	WV	TOTAL
Public Schools							
Total Number of Public Schools	196	193	1,332	3,736	1,750	1,250	8,457
Number of School Districts	1	16	24	511	95	55	702
Public Schools Inspected to Date	196	193	1,300	3,407	1,062	1,165	7,323
Public Schools which need Corrective Action	0	0	149	575	98	98	1,030
Corrective Action to Date	8	3	UK	UK	109		120
Number of Students	91,828	92,646	721,841	1,839,015	975,727	400,000	
Non-Public Schools							
Total Number of Non-Public Schools	120	99	367	2,230	384	97	3,387
Non-Public Schools Inspected to Date	14	UK	UK	604	UK	UK	618
Non-Public Schools Which need Corrective Action	UK	UK	UK	147	UK	UK	147
Corrective Action Taken to Date	UK	24,112	133,485	394,099	71,395	13,000	

SURFACE WATER QUALITY

Introduction

The water quality problems in Region III will be described through analysis of the following parameter groupings which are closely associated with the identified pollutant sources:

Parameters	Major Sources
ph, Iron, Sediment	Coal Mining (Active and Inactive)
Toxics (organic & inorganic)	Industrial Point and Non-Point
Nutrients, Sediments	Domestic Waste*, Agricultural and Urban Runoff
Bacteria	Domestic Waste*, Agricultural and Urban Runoff
Dissolved Oxygen	Domestic Waste*, Industrial Point

Since these parameter groupings are strongly associated with a particular source category or categories, the resolution of these problems can be viewed in programmatic terms.

For the purposes of this report, a water quality problem is one which results in stream use impairment. In determining stream use impairment, Region III did not rely solely on numerical standards violations. The streams and lakes designated as having impaired uses were those for which there was evidence of one or more designated uses being precluded or limited as a result of pollution.

Use impairments were classified as severe, moderate or potential. Several criteria were used including degree of impairment, type of impairment and the duration of the impairment. If one or more designated uses were completely precluded for a significant period of the year, the impairment was considered severe (e.g., absence of aquatic life, shellfish closure). Severe impairments were also designated where pollution resulted in a significant health risk (e.g., exceedance of FDA Action Level for toxics concentration in fish). A moderate impairment was designated where use was only limited (e.g., shift to less desirable aquatic species, insignificant duration of impairment). A potential impairment was designated where professional judgement of available information found the possibility of a problem (e.g. appearance of toxics levels whose effects are unknown at this time. Due to an inadequate data base, severe versus moderate impacts were also distinguished through best professional judgement.

---

*Includes combined sewer overflows.

Table 1 estimates stream length of use impairment in Region III.* Figures 3 to 9 identify, by parameter, problems greater than 5 miles in length. Lakes which had an adequate data base (primarily developed under the Clean Lakes program) were also included in this report.

Information in Table 1 (and Appendix A) was attained from State 305(b) Reports and State Water Quality Management Agency staffs. Comprehensive lists of specific waterbodies with use impairment can be obtained from these sources or EPA Region III.

---

*The relative degree of use impairment from state to state is expressed in Impaired Stream Miles per 1000 square miles due to lack of reliable total streamlength figures.

TABLE 1

SUMMARY TABLE: WATER USE IMPAIRMENTS - REGION III

STREAM MILES OF USE IMPAIRMENT (SEVERE, MODERATE, POTENTIAL)

PROBLEM PARAMETERS	PA	MD	WV	VA	DE 4/	DC	Region III
pH, Iron, Sediment	S-1815	S-74	S-238	S-245	S-0	S-0	S-2372
	M-0	M-0	M-748	M-20	M-0	M-0	M-768
	P-0	P-0	P-54	P-0	P-0	P-0	P-54
Nutrients Sediment	S-0	S-4	S-0	S-28	S-3	S-8	S-43
	M-233	M-430 1/	M-112	M-67	M-17	M-11	M-870
	P-0	P-10	P-0	P-107	P-0	P-0	P-107
Dissolved Oxygen	S-0	S-13	S-0	S-91	S-3	S-8	S-115
	M-271	M-18	M-111	M-25	M-0	M-11	M-436
	P-434	P-0	P-0	P-0	P-52	P-0	P-486
Toxics Organic/ Inorganic	S-195	S-0	S-5	S-138	S-3	S-0	S-341
	M-170	M-0	M-336	M-102	M-23	M-8	M-639
	P-35	P-0 2/	P-0	P-33	P-0	P-0	P-68
Bacteria	S-0	S-44	S-0	S-250	S-119	S-8	S-411
	M-0	M-171	M-0	M-147	M-31	M-19	M-368
	P-0	P-0	P-0	P-64	P-0	P-0	P-64
*Total Impaired Stream miles	2,744	600	1,543	1,024	150	27	6,088
Area in Square Miles	45,333	10,577	24,181	40,817	2,057	67	23,032
Impaired Stream Miles per 1000 sq.mi.	61	57	64	25	73	--	49
Number of Lakes With Impaired Uses 3/	S-9	S-1	S-0	S-7	S-7	S-0	S-25
	M-3	M-2	M-0	M-2	M-11	M-0	M-18
	P-15	P-0	P-1	P-46	P-12	P-0	P-74

*Note: Some stream segments may be double counted if more than one grouping of problem parameters contributes to the impaired use. However, for the total miles impaired there is no double count included.

1/ Does not include upper Chesapeake Bay which is moderately impaired.

2/ Does not include upper Chesapeake Bay which is potentially impaired.

3/ Only the severe and moderately impaired lakes are identified on the nutrients/ sediments/lakes map.

4/ Six instances of potential use impairment were identified where stream length was either inappropriate (e.g., a bay) or unknown. Four were potential toxics problems; two potential bacteria problems.

pH, Iron, Sediment

Use impairment by this parameter group is due to active and inactive abandoned coal mining sites, with the latter predominating. Based upon the summary table, coal mining causes the most extensive and severe stream impairment of any problem category in Region III. About 49% of the impaired streams in Region III are due to coal mining impacts. These impacts occur primarily in Pennsylvania and West Virginia. Use impairment is severe in Pennsylvania and northern West Virginia, where drainage is highly acidic. Discharges in southern West Virginia are not highly acidic, but still contain excessive levels ofmetals and sediment.

Low pH values and high levels of heavy metals typical of many mine drainage impacted streams are lethal to aquatic life. In addition, the persistence of acidic conditions in natural waters practically ensures that the effects of mining will be felt far downstream of the actual source. Streams affected by coal mining may also seriously impair contact recreation, domestic and industrial water supply, aesthetics and pre-maturely corrode man-made structures.

Nutrients, Sediments

Nutrient problems are typically due to either domestic waste or agricultural runoff. Urban runoff also contributes. Sediment problems (in addition to those created by mining) are primarily agricultural in origin. Problem areas are in watersheds with large population centers or heavy agricultural land use or a combination of the two. About 14% of the use impaired streams in Region III are attributed to Nutrient and Sediment contributions. In addition, the Upper Chesapeake Bay is considered to be nutrient enriched.

Sediments destroy bottom habitat suitable for fish reproduction by smothering the benthic organisms and by filling in suitable spawning and growth habitats. Sediments which settle in a reservoir diminish its capacity, reducing the life of a reliable public water supply. Sediments also act as the vehicle for transport of attached nutrients from non-point sources.

Excessive levels of nutrients, primarily nitrogen and phosphorus, cause overproduction of aquatic plant life, eg., eutrophication. Lakes or other slow moving bodies of water are particularly sensitive to this problem. Excessive plant growth will produce large fluctuations in dissolved oxygen causing significant stress on other aquatic life. In addition, algae produce an undesirable taste and odor to water and diminishes its desirability or useability as a domestic water source.

The use impaired lakes in Region III are shown on the Nutrients/Sediments map. Eutrophic conditions in lakes reduce the recreational value (ie: swimming, boating, aesthetics), the aquatic life productivity, and the potential for domestic water supply. Through the Clean Lakes programs, comprehensive information is available on most of the lakes in Delaware. This is not the case for the other states in the Region.

Evaluations have indicated that 117 lakes in the Region would be classified as eutrophic. Of these, 42 lakes have been identified as having significant use impairment (24 severe, 18 moderate). Non-point sources were deemed to be significant in all but one case. Potential impairments were not identified on the Regional map since all of the remaining eutrophic and mesotrophic lakes fit this category. (See Figure 4.)

FIGURE 3

pH/Iron/Sediment

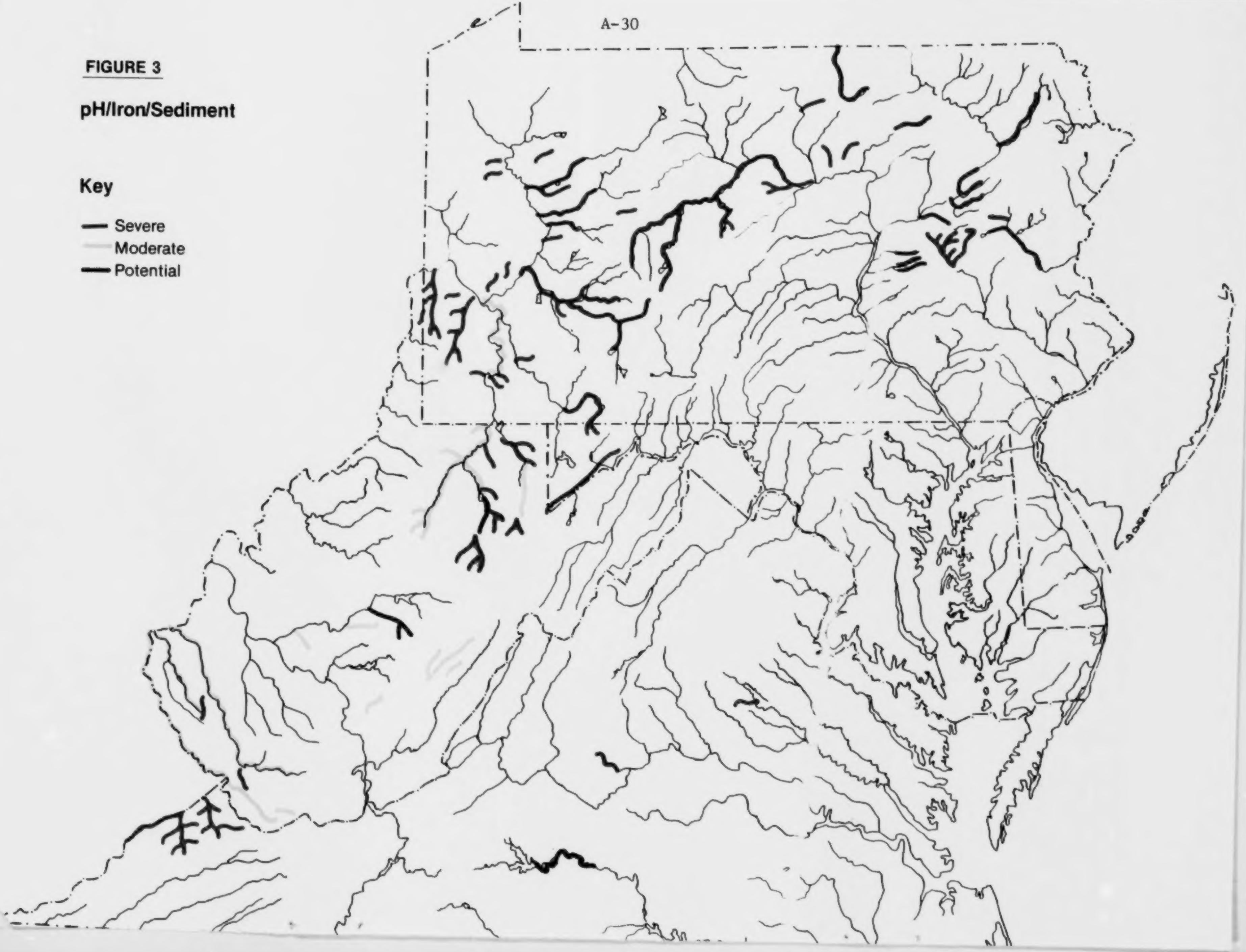
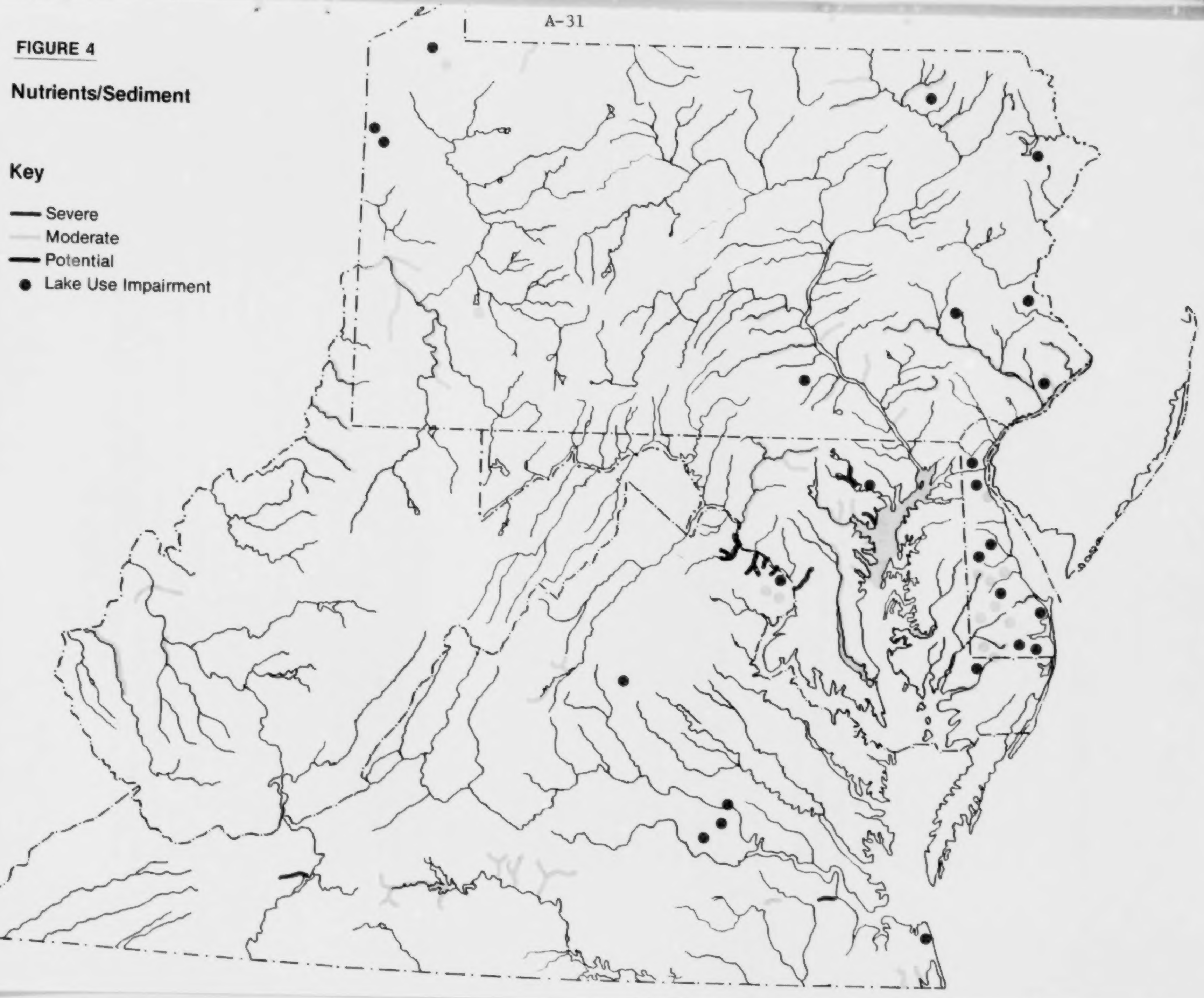

Key
Severe
Moderate
Potential

FIGURE 4

Nutrients/Sediment


Key
Severe
Moderate
Potential
● Lake Use Impairment

Dissolved Oxygen (DO)

DO problems are typically caused by organic enrichment from municipal and industrial point sources. Therefore, DO problems may be expected near industrial or population centers. There are a substantial number of DO problems created by the discharges of small communities into small streams. Regionwide, about 9% of the use impaired streams are due to inadequate DO levels.

Due to the tremendous capacity of stream systems to recover from organic enrichment, DO problems are not extensive, especially in terms of length of stream affected and duration of use impairment. This self-purification ability of streams is a key factor in minimizing the length of streams being impaired by DO. Generally, DO problems produce a subtle use impairment characterized by a shift in the resident biota to less desirable species. (See Figure 5.)

Bacteria

Municipal point source, combined sewer overflows and urban runoff are prime sources of bacterial problems in Region III. Although there are many areas in Region III with significant violations of numerical bacteria standards, these violations were not considered to be use impairing unless they directly contributed to a shellfish or designated swimming area closure. The protection of shellfish from bacterial contamination requires maintenance of a significantly lower bacteria population than for the protection of bathing beaches. Some of the identified closures are due to natural conditions or simply due to the proximity of the shellfishing beds to a wastewater discharge without consideration of the bacterial water quality. Regionwide, this problem accounts for an estimated 12% of the impaired stream miles. (See Figure 6.)*

Toxics

Most of the toxics problems identified are generated from industrial discharges and are concentrated downstream of large industrial centers. A comprehensive identification of toxics problems is limited by a minimal data base, despite recent data gathering efforts. Since additional data is expected to identify more use impairment, this may be considered an emerging problem.

Toxics impacts on water bodies can be intermittent or persistent. Intermittent problems are often the result of spills from a variety of industrial sources. Industrial spills have the potential to contaminate public water supplies with substances ranging from those causing taste and odor problems, e.g., phenols (defined as a moderate impairment), to those with potential public health effects (defined as a potential impairment), e.g. trichloroethylene. Though spill data exists for many areas, current monitoring efforts generally are not sufficient to define the extent of this problem on a Regional basis. For more analysis, see Spills below.

*Bacterial related use impairments in Delaware, through identified in Table 2, are not mapped in Figure 6.

Many waterbodies are affected by persistent toxics levels resulting in contamination of the sediments and fish. Toxic levels can be high enough to eliminate aquatic communties or violate toxic criteria for fish tissue, resulting in prohibitions on fishing e.g., lower James River due to kepone levels. Both of these types of impairments are considered severe. The longevity of this type problem is presently unknown. Generally, data indicates that levels of some toxics in fish and sediment have decreased in recent years, particularly where control programs are in place, e.g., PCB. There is evidence that toxics levels have gone down in some waterbodies due to decreased industrial production and improved treatment e.g. Monongahela River. Overall, however, the public health effects of current toxic levels in the region still have not been adequately defined. For a more detailed anaylsis of PCB's, see PCB Compliance Monitoring Program below.

In Region III, an estimated 16% of the impaired streams are due to toxics. In addition, localized areas in the Chesapeake Bay contain levels of heavy metals which represent a potential problem.

FIGURE 5

Dissolved Oxygen

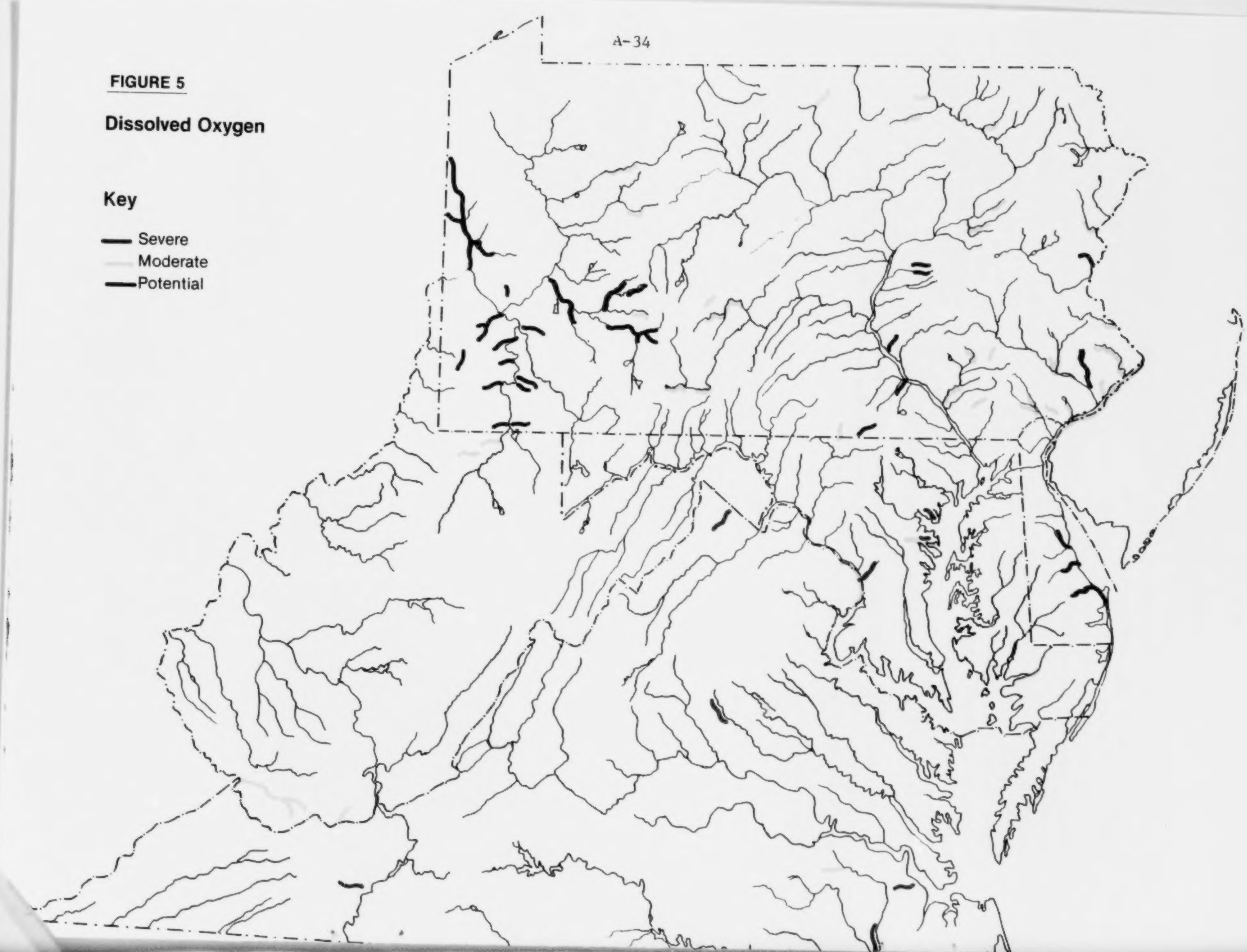

Key
Severe
Moderate
Potential

FIGURE 6

Bacteria

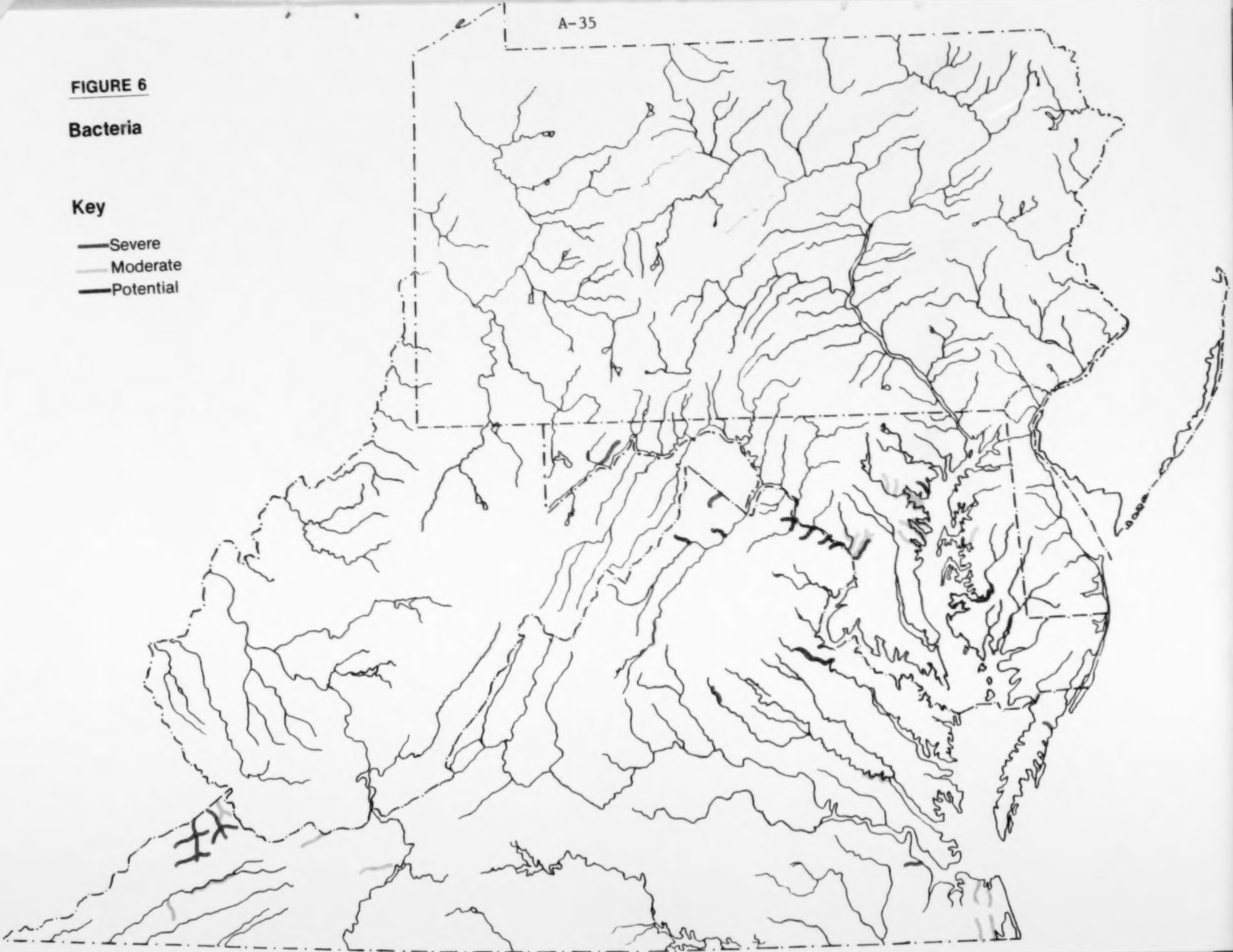
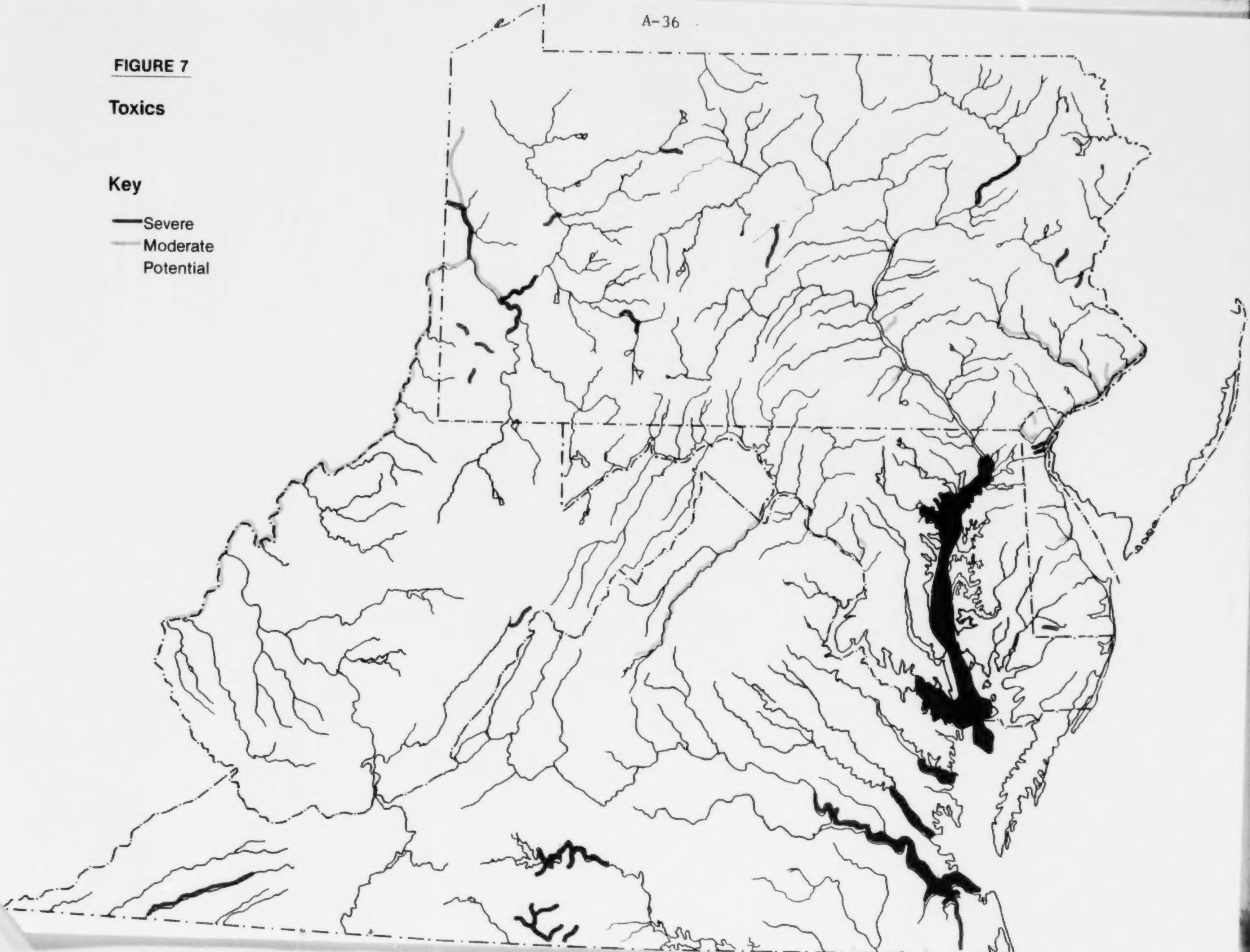

Key
Severe
Moderate
Potential

FIGURE 7

Toxics


Key
Severe
Moderate
Potential

Spills

Spills of oil or hazardous substances can pose a substantial threat to human health or aquatic life. Due to the potential acute effects of spills, emergency response action is required.

Region III received notice of 765 oil spills and 377 spills of hazardous materials from October 1, 1981 to June 30, 1982 (3/4 year). The quantity of materials spilled varied from a few gallons to thousands of gallons. In each case, confirmation was made by phone or site visit, that appropriate corrective actions were taken. At this time, the number of gallons of oil removed from the environment during cleanup and relative number of stream miles affected by spills have not been identified.

PCB Compliance Monitoring Program

Polychlorinated biphenyls (PCB's) are (1) highly toxic to aquatic life at extremely low concentrations, (2) persisitent, thus posing long-term risks to human health, (3) known carcinogens, (4) bioaccumulative, thus adversely affecting growth and reproduction in fish and other biological life. The primary objective of the PCB Compliance Monitoring Program is to keep PCB's from entering the environment. By establishing an enforcement presence and inspecting for compliance with the regulations, the region influences the regulated community to properly dispose of PCB's and minimizes the affects of spills to the the nation's waterways.

The following table summarizes Regional compliance status for FY'81 and FY'82:

	Total Case		Violations			
	Inspections	Complaints		Informal	Number in	
	Review	Issued	Actions [2]	Compliance	%Compliance	
FY'81	80		7	38	35	43
FY'82	75 [1]		19	27	29	39

[1] Total reports reviewed as of 12/17/82. Total FY'82 inspections - 116.

[2] Includes notices of non-compliance, letters, verbal communications with documentation.

Of the 46 documented violations as of 12/17/83, seven (7) were cases where the Region is now or has already forced the cleanup of PCB's that had entered the environment. Therefore, at least 6% of the 116 inspections for FY'82 definitely resulted in environmental cleanup. Certainly, many of the marking and similar-type violations discovered and corrected will prevent PCB's from entering the environment. Because of these environmentally-significant results, Region III is continuing to follow the PCB Enforcement Strategy modified to handle Region III's problems.

Region III has over 3500 facilities which use a toxic chemical, PCB, in certain operations. These do not include the large commercial buildings that have transformers throughout our cities. With present resources, it will take over 20 years to inspect the 3000 remaining potential PCB users that have not been visited. Figuring 6% of 3000, there are at least 180 sites in Region III where PCB's will affect or have entered the environment. Also figuring that we are finding only 40% compliance status, this means that approximately 1800 facilities in Region III are in violation of the PCB rule. Additional resources must be allocated to more quickly address these problems.

In addition to the toxics parameter group, these additional emerging water quality problems were identified:

Acid Precipitation

Acid precipitation is emerging as a problem of serious public concern. It has been theorized that air emissions from coal fired power plants and other sources are indirectly producing acid precipitation which may be responsible for serious declines in the pH of waterbodies in the U.S. and Canada, particularly lakes. Unfortunately, documented trends in pH of waterbodies have been difficult to establish with past data and current monitoring efforts. Historical pH data is limited in value, due to variable methods of sampling and analysis, while current pH monitoring programs have not been properly planned for assessing impacts of acidic precipitation on waterbodies. However, it is probable that some documentation of acid precipitation impacts on water quality exists but has not been made available to EPA Region III at this time. Overall, current and projected effects of acid precipitation on waterbodies of Region III have not been adequately documented.

Wetlands

Located at the interface between receiving waterbodies and terrestial sources of pollution, wetlands have been found to reduce sediment loads, nutrient levels and toxic chemical concentrations in the water column. All of the states in Region III, except West Virginia, have implemented wetland protection laws due to their positive effect on water quality. These laws vary in their effectiveness and generally provide adequate protection to coastal systems, but limited protection to inland, freshwater systems. Table 2 and Figure 8 identify the lost and threatened wetlands in Region III.

Some of the major activities which threaten existing wetlands are: impoundment, fill and drainage projects, water port development, non-point sources of nutrients, sediment and pesticides, mining, and land development. Some significant threatened wetlands in Region III are: 1. the Upper Chesapeake Bay, (where water quality may be causing losses in submerged aquatic vegetation), 2. Pocono Region in PA (due to peat mining operations and home development), 3. Philadelphia, Baltimore and Wilmington areas (Port development activities) and 4. Canaan Valley, WV (potential pump storage project). (See Figure 8).

Oil and Gas Operations

Impacts of oil and gas drilling and recovery operations are responsible for significant surface water use impairment in western Pennsylvania and northwestern West Virginia. Excessive levels of sediment, total dissolved solids, a variety of toxic compounds and high or low pH due to oil and gas operations severely degrade aquatic communities and aesthetics, and increase water treatment costs. Sources associated with these problems include: 1) discharges of highly acidic, alkaline or toxic drilling wastes from storage pits, 2) spills of oil and gas, 3) chronic leaks of oil and gas from pipe systems, 4) discharge of brines (with high levels of dissolved solids)and 5) erosion from operation sites. Pennsylvania has identified at least 40 miles that are severely impaired while West Virginia has identified areas of major impairment. As data gaps on this problem are filled, additional impairment is expected to be identified. The number of permitted operations have grown significantly over the last five years and associated water quality problems are suspected to be growing steadily.

TABLE 2

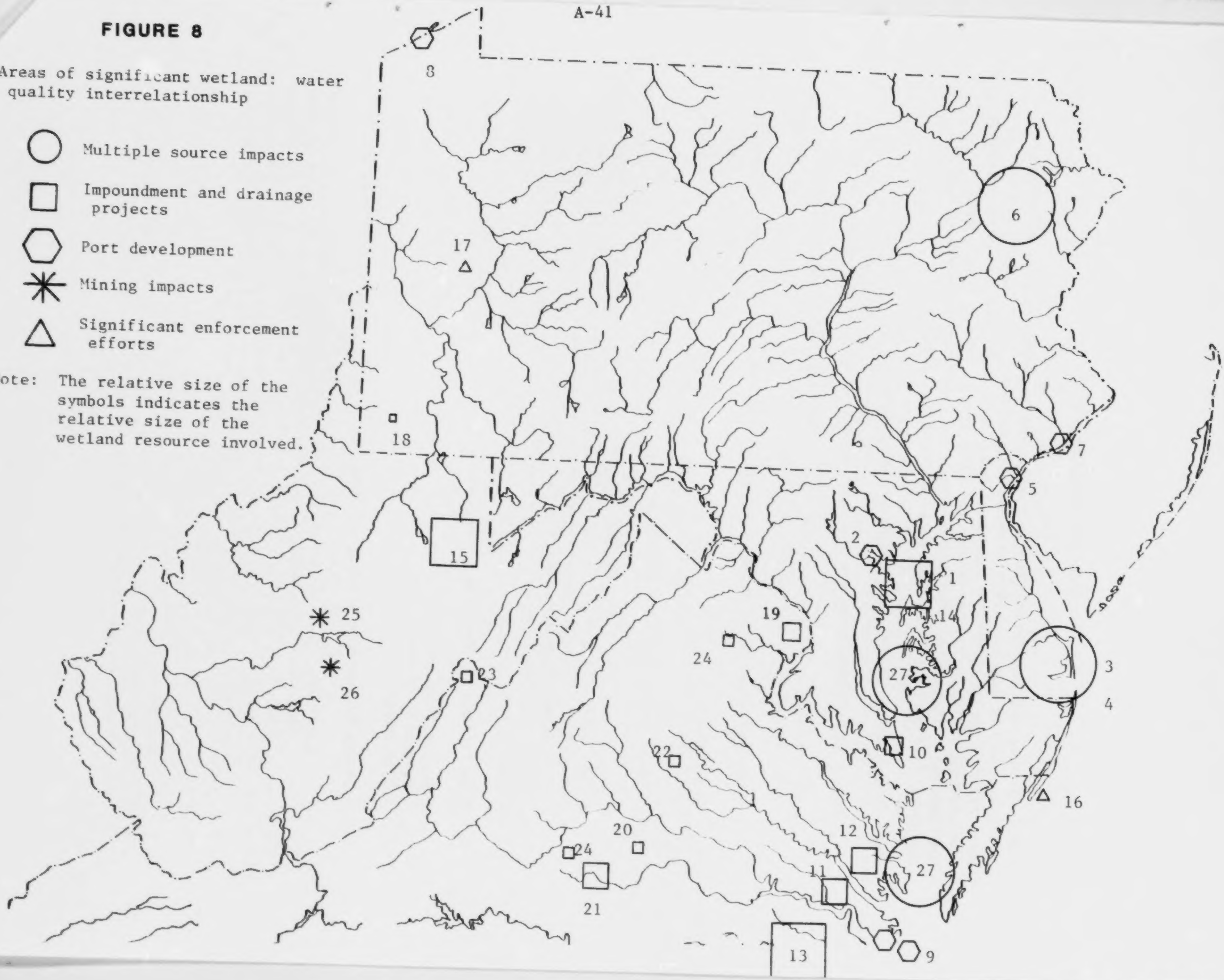
WETLAND ISSUES

Region III

ThreatenedArea	WetlandSize	ThreattoResource
1. Upper Chesapeake, MD	40,000 ac. (SAV's)	NPS nutrients, sediment, pesticides
2. Baltimore, MD	-	port development
3. Indian River Bay, DE	-	nutrients, residential development
4. Rehoboth Bay, D	-	nutrients, residential development
5. Wilmington, DE	-	port development
6. Pocono Region, PA	80,000 ac.	peat mining, home development
7. Philadelphia, PA	-	port development
8. Erie, PA	-	port development
9. SE Virginia (SMSA)	-	port developmen
10. St. Mary's River, MD	150 ac.	impoundment
11. Ware Creek, VA	300 ac.	impoundment
12. Beaverdam Swamp, VA	700 ac.	impoundment
13. Assamoosick Swamp, VA	7,500 ac.	impoundment
14. Upper Chester River, MD	3.600 ac.	drainage project
15. Canaan Valley, WV	4,500 ac.	impoundment
16. Chincoteague, VA	-	development (fill)
17. Armstrong County, PA	100 ac.	development (fill)
18. Wheeling Creek, PA	40 ac.	impoundment
19. Pohick Creek, VA	50 ac.	impoundment
20. Nibbs Creek, VA	100 ac.	impoundment
21. Bush River, VA	600 ac.	impoundment
22. South Anna River, VA	50 ac.	impoundment
23. Great Creek, VA	35 ac.	impoundment
24. Cedar Run, VA	100 ac.	impoundment
25. Davis Trucking Mine, WV	90 ac.	mining
26. Holly Grove Mine, WV	30+ ac.	mining
27. Chesapeake, MD/VA		multiple dredge & fill projects

FIGURE 8

Areas of significant wetland: water quality interrelationship


8
17
18
15
25
26
23
6
7
5
2
1
14
19
24
3
4
27
10
22
16
20
24
12
27
11
21
13
9

○ Multiple source impacts

□ Impoundment and drainage projects

⬡ Port development

✳ Mining impacts

△ Significant enforcement efforts

Note: The relative size of the symbols indicates the relative size of the wetland resource involved.

TABLE 3

Priority Ranking System

The following outline describes the system and assumptions used to indentify high priority water quality problem streams and rivers in Reigon III. In many cases, precise data and information was not available and best judgement was used in assigning point values and interpreting the 305(b) report information. Therefore, the system should be considered a rough, first cut approach in screening the problems identified in Appendix A.

The maximum score under this system is 100 points.

1. Degree of Use impairments ....(Max. 20 points)

. Severe (one or more designated uses completely precluded such as aquatic life or shellfishing).	20 points
. Moderate (partial duration or limited impairment)	10 points

2. Value of Use Impairment (Add impaired uses but do not exceed 30 points) ....(Max. 30 points)

. Public Water Supply - health related	25 points
. Commercial Fishing	15 points
. Public Water Supply - aesthetic only	10 points
. Cold Water Fishing	10 points
. Swimming	10 points
. Warm Water Fishery	8 points
. Trout Stocking	8 points
. Aesthetics	6 points

3. Significance of Resource ....(Max. 30 points)

. Regional or national value	30 points
. Statewide Significance	20 points
. Only Local Significance	10 points

4. Population Impacted (County or SMSA) ....(Max. 20 points)

1,000,000	20 points
500,000 - 1 million	15 points
100,000 - 500,000	10 points
30,000 - 100,000	5 points
30,000	3 points

Errata:

Figure 2 -

Severe DO Impairment for Delaware should be indicated as an estimated 3 miles. Moderate DO impairment should be indicated as zero miles.

Figure 6 -
Delaware streams impacted by bacteria are not mapped.

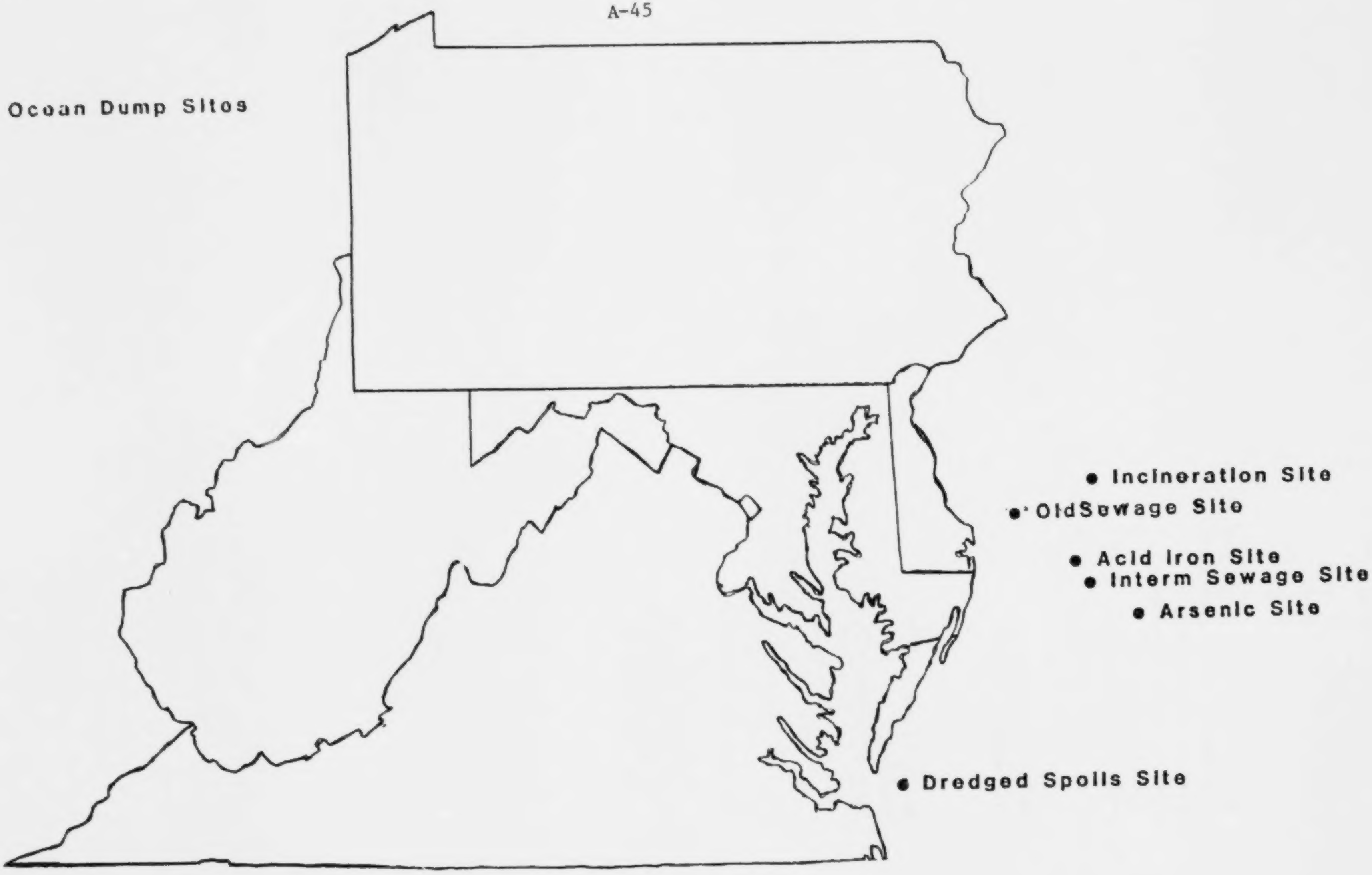
- Buntings Branch, a stream segment in southern Delaware severely impaired by toxics, has been incorrectly mapped. It is located in the northeast portion of Pocomoke River headwaters.

OCEAN PROBLEMS

Summary of U.S. EPA Region III Dumpsite-Total Wastes Dumped

Dumpsite	Waste Type	Coordinates (Latitude, Longitude)	Quantity (thousand metric tons)
Old sewage sludge site (1961-1973)	Sewage sludge	38°45'N, 75°47'W	3750
Interim sewage sludge site (1973-1980)	Sewage sludge	38°20'-33°25'N 74°10'-74°20'W	4110
Acid-iron waste site (1969-1977)	Acid	38°30'-38°35'N 74°15'-74°20'W	5060
Arsenic waste site (1966-1974)	Caustic	38°00'-38°20'N, 73°00'-74°20'W	110

Ocean Dump Sites


Incineration Site
OldSewage Site
Acid Iron Site
Interm Sewage Site
Arsenic Site
Dredged Spoils Site

Potential 301(h) Applicants

Virginia

VA0024457	U.S.A. Wallops Island (NASA)
VA0025003	Portsmouth - Pinners Point
VA0051756	Town of Chincoteague
VA0021288	Town of Cape Charles
VA0062618	HRSD - Atlantic
VA0064459	HRSD - Nansemond

Maryland

MD0020044	Ocean City
MD0020401	Chesapeake City

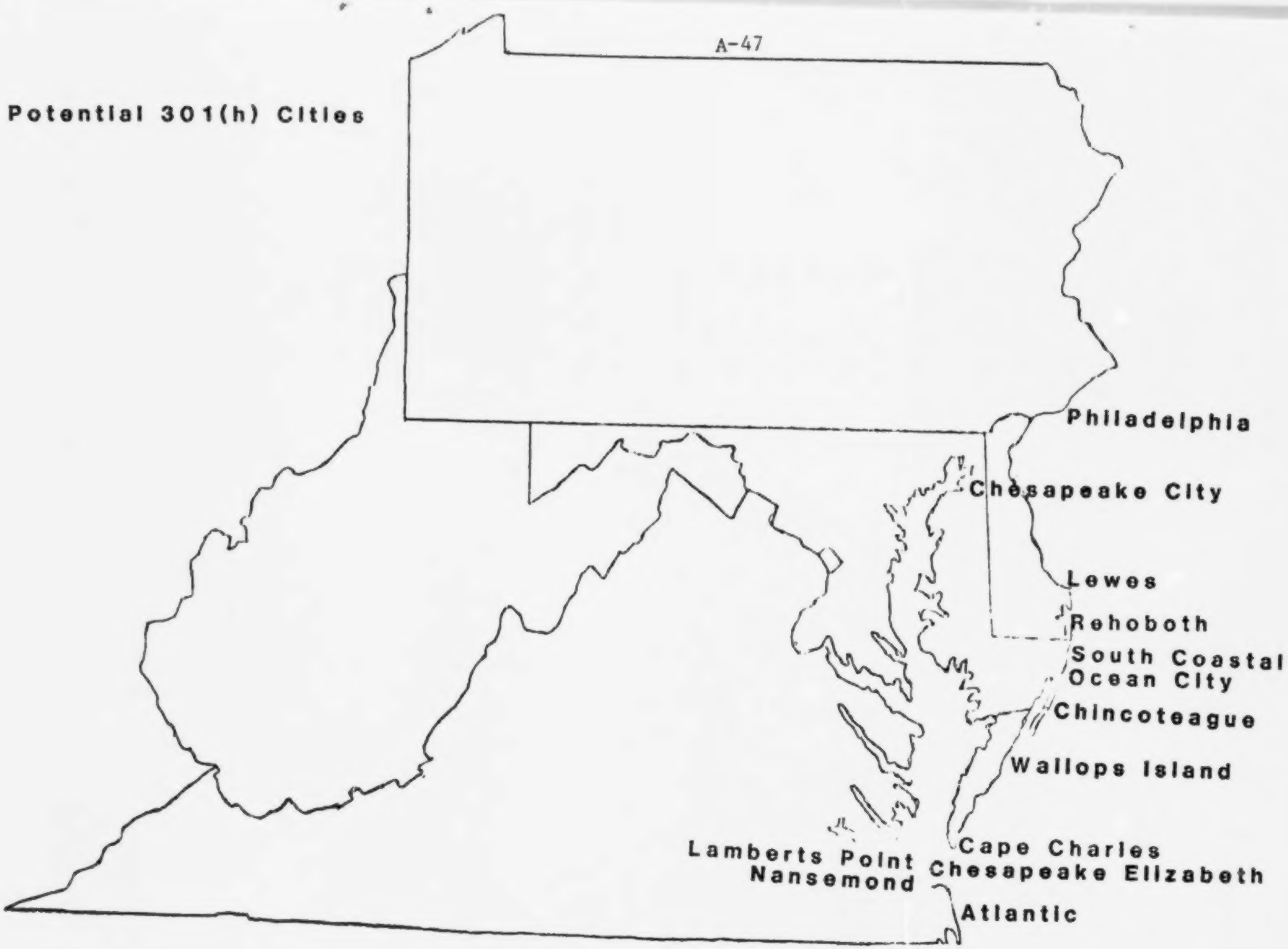
Delaware

DE0005008	South Coastal WWTP
DE0020028	Rehoboth
DE0021512	City of Lewes STP

Pennsylvania

PA0025671	City of Philadelphia
PA0026689	City of Philadelphia
PA0026662	City of Philadelphia

Potential 301(h) Cities


Philadelphia
Chesapeake City
Lewes
Rehoboth
South Coastal
Ocean City
Chincoteague
Wallops Island
Cape Charles
Lamberts Point
Chesapeake Elizabeth
Nansemond
Atlantic

Approved Drilling Mud types

1. Seawater/Freshwater/Potassium/Polymer Mud

Components	Authorized Range pounds per barrel
KCl	5.0 - 50
Starch	2.0 - 12
Cellulose Polymer	0.25 - 5
XC Polymer	0.25 - 2
Drilled Solids	20.0 -100
Caustic	0.5 - 3
Barite	0.0 -450
Seawater or freshwater	As needed

2. Seawater/Lignosulfonate

Components	Authorized Range pounds per barrel
Attapulgite or Bentonite	10.0 - 50
Lignosulfonate	2.0 - 15
Lignite	1.0 - 10
Caustic	1.0 - 5
Barite	25.0 - 450
Drilled Solids	20.0 - 100
Soda Ash/Sodium Bicarbonate	0.0 - 2
Cellulose Polymer	0.25- 5
Seawater	As needed

3. Lime

Components	Authorized Range pounds per barrel
Lime	2.0 - 20
Bentonite	10.0 - 50
Lignosulfonate	2.0 - 15
Lignite	0.0 - 10
Caustic	1.0 - 5
Barite	25.0 -180
Drilled Solids	20.0 -100
Soda Ash/Sodium Bicarbonate	0.0 - 2
Seawater or freshwater	As needed

4. Nondispersed

Components	Authorized Range pounds per barrel
Bentonite	5.0 - 15
Acrylic Polymer	0.5 - 2
Barite	25.0 - 180
Drilled Solids	20.0 - 70
Seawater or freshwater	As needed

5. Spud

Components	Authorized Range pounds per barrel
Lime	0.5 - 1
Attapulgite or Bentonite	10.0 - 50
Caustic	0.0 - 2
Barite	0.0 - 50
Soda Ash/Sodium Bicarbonate	0.0 - 2
Seawater	As needed

6. Seawater Freshwater Gel

Components	Authorized Range pounds per barrel
Lime	0.0 - 2
Attapulgite or Bentonite	10.0 - 50
Caustic	0.5 - 3
Barite	0.0 - 50
Drilled Solids	20.0 - 100
Soda Ash/Sodium Bicarbonate	0.0 - 2
Cellulose Polymer	0.0 - 2
Seawater or freshwater	As needed

7. Lightly Treated Lignosulfonate Freshwater/Seawater

Components	Authorized Range pounds per barrel
Lime	0.0 - 2
Bentonite	10.0 - 50
Ligonsulfonate	2.0 - 6
Lignite	0.0 - 4
Caustic	1.0 - 3
Barite	0.0 -180
Drilled Solids	20.0 -100
Soda Ash/Sodium Bicarbonate	0.0 - 2
Cellulose Polymer	0.0 - 2
Seawater to Freshwater Ratio	1:1 - approx.

8. Lignosulfonate Freshwater

Components	Authorized Range pounds per barrel
Lime	0.0 - 2
Bentonite	10.0 - 50
Lignosulfonate	4.0 - 15
Lignite	2.0 - 10
Caustic	2.0 - 5
Barite	0.0 -450
Drilled Solids	20.0 -100
Cellulose Polymer	0.0 - 2
Soda Ash/Sodium Bicarbonate	0.0 - 2
Freshwater	As needed

DRINKING WATER PROBLEMS

According to the latest inventory, of the 5,854 community water systems in Region III, 5,272 are small water systems serving fewer than 3,301 people. Thus, the vast majority of community water systems would be considered small water systems. Although this represents only 9.1 percent of the total population served by community water systems, approximately 98 percent of the persistent violations of the SDWA requirements occur in small systems.

These violations involve failure to meet Monitoring and Reporting (M/R) requirements or failure to comply with a Maximum Contaminant Level (MCL) requirement. M/R requirement specifies how frequently a system must sample and report for each contaminant. MCL requirement specifies the quality standard for each contaminant.

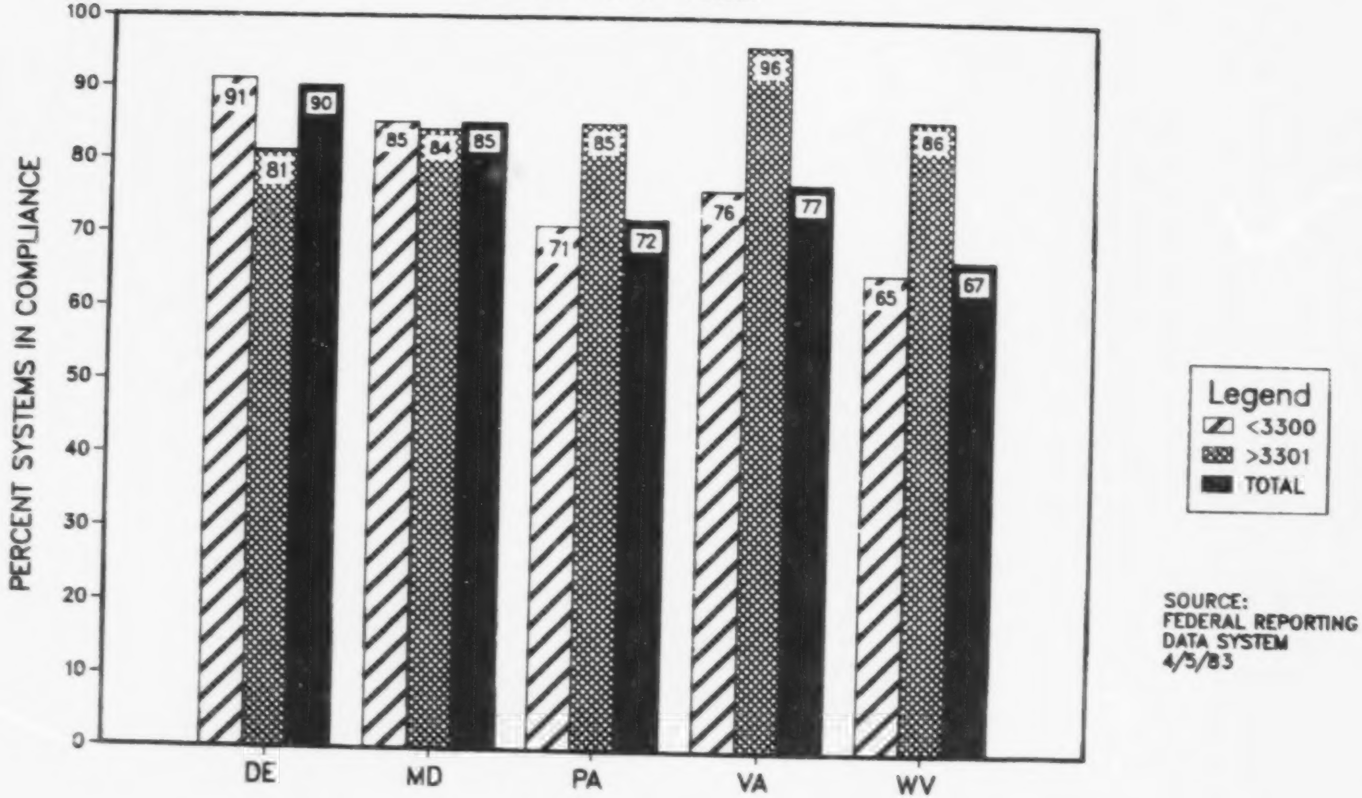
During FY'82 there were 1,463 systems with violations; of these, 1,388 systems involved small water systems. There were 480 systems with violations persisting over three months in FY'82.

Regional and state-by-state data on public water supply systems and violations are presented in the accompanying graphics.

Region III is pursuing the Small System Strategy developed by the Office of Drinking Water as a means of dealing with this problem. This strategy establishes priorities for those systems having greatest affect on the greatest number of people. It encourages technical assistance and operator training activities to improve operational functions. It suggests providing the small systems with direction to existing financial subsidy programs, and consolidation of small systems into regional water systems as an economic solution.

These strategies will bring about significant reductions in the number of problem systems. The provision of safe drinking water to the public must, however, be continuous and ongoing, with a comprehensive program for monitoring systems and dealing with contaminants as they appear.

REGION III DRINKING WATER COMPLIANCE COMPARISON BY SYSTEM SIZE*
FISCAL YEAR 1982

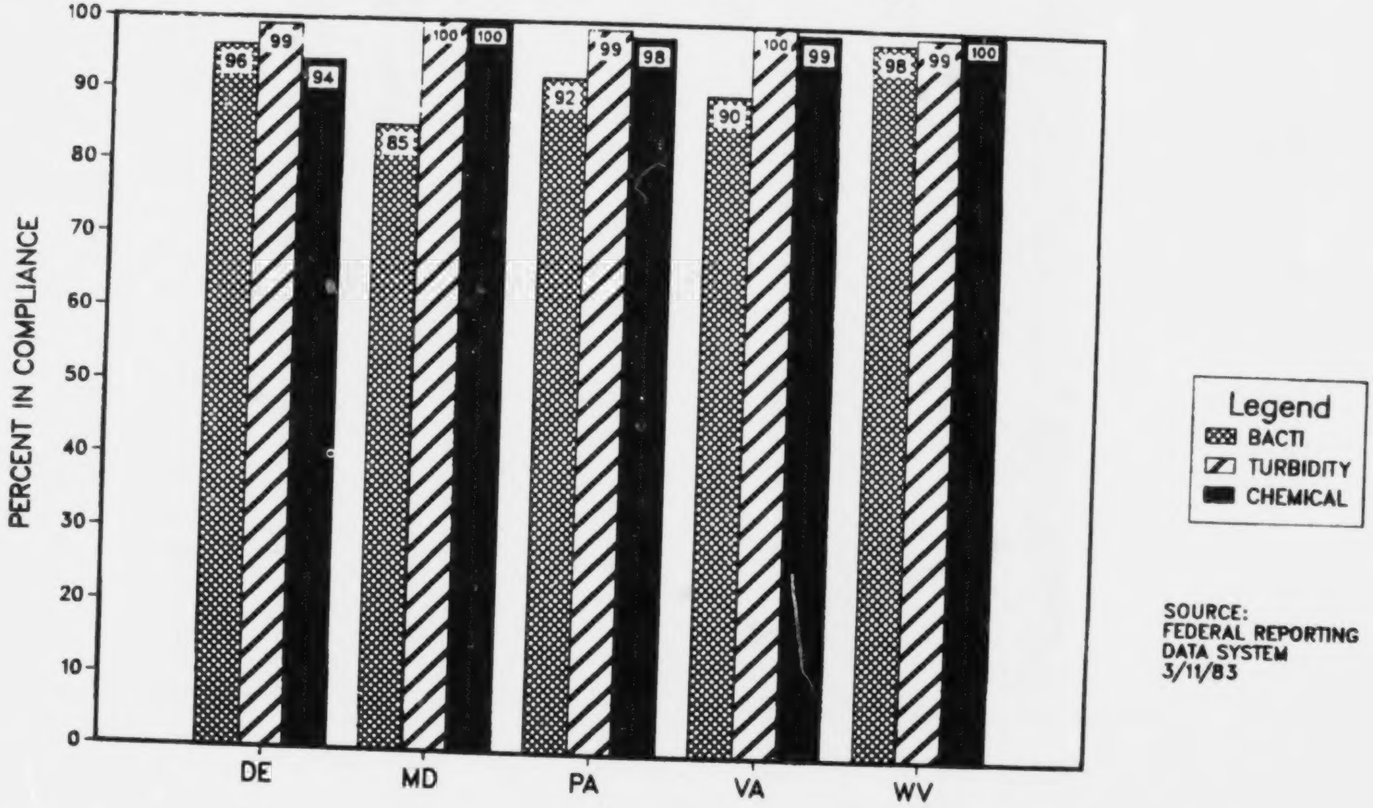


SOURCE:
FEDERAL REPORTING
DATA SYSTEM
4/5/83

	DE	MD	PA	VA	WV	POP
COMMUNITY SYS <3300	171	540	2106	1729	726	2.2M
COMMUNITY SYS >3301	16	55	292	134	85	22.4M

*CALCULATED BY COMPARING NUMBER OF SYSTEMS WITHIN A SIZE CATEGORY TO THE TOTAL NUMBER OF SYSTEMS IN VIOLATION WITHIN SAME SIZE CATEGORY

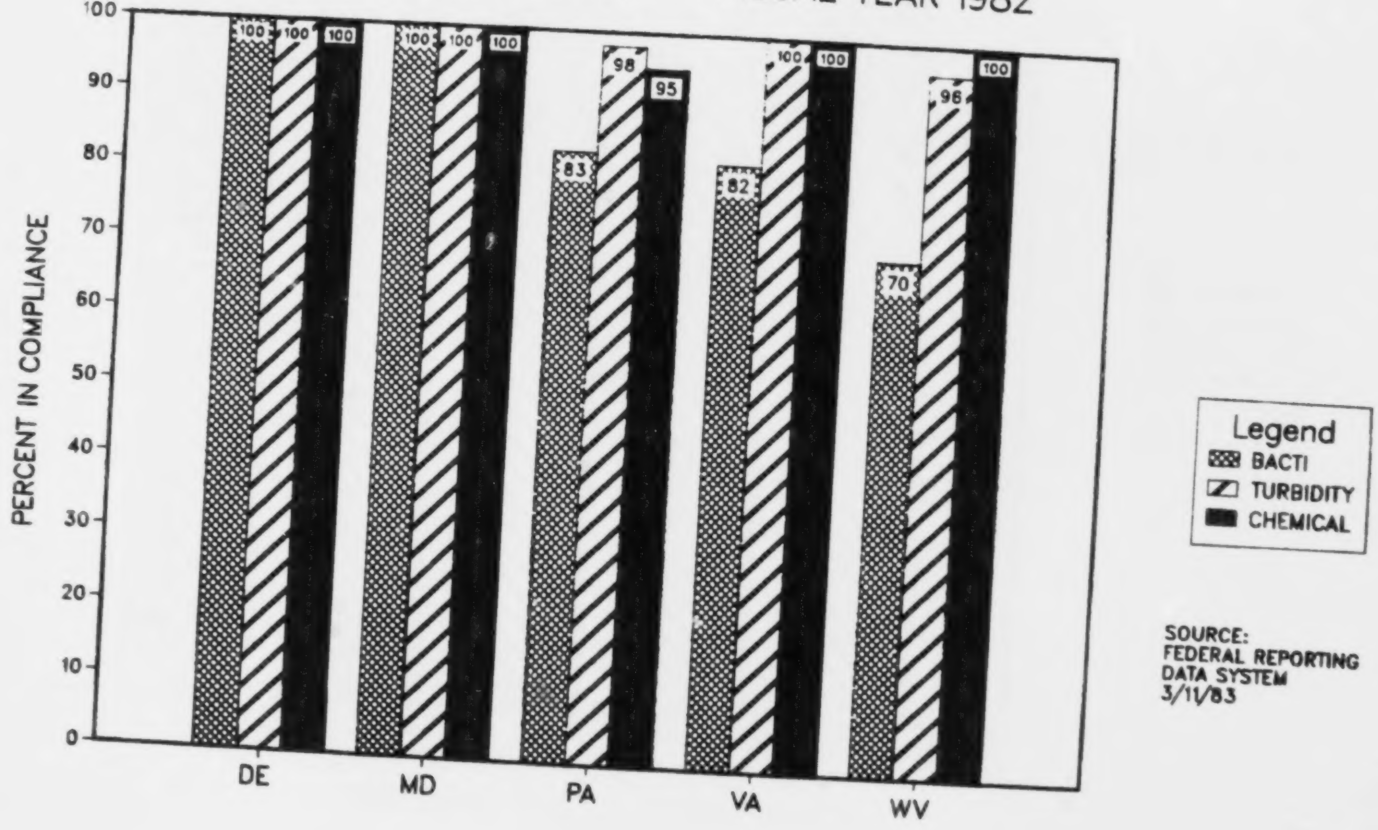
REGION III DRINKING WATER COMPLIANCE
MAX CONTAMINANT LEVEL – FY 82



	DE	MD	PA	VA	WV	TOTAL POP
SYS <3300	171	510	2106	1729	726	2.2M
TOTAL SYS	187	595	2398	1863	811	22.4M

SOURCE:
FEDERAL REPORTING
DATA SYSTEM
3/11/83

REGION III DRINKING WATER COMPLIANCE MONITORING/REPORTING -- FISCAL YEAR 1982



SOURCE:
FEDERAL REPORTING
DATA SYSTEM
3/11/83

GROUND WATER PROBLEM

Criteria for Selection of Significant Problem Areas

Four major areas of concern were identified to represent the categories of importance in selecting significant problem criteria. Within each category more specific point scoring criteria was established and assigned based on various considerations. The scoring system is prescribed below.

Health (0-40 points)

- Population Impacted
- Types of Contaminants

Feasibility (0-40 points)

- Technically Solvable
- Funds Available
- Legal Authority
- Cooperation

Relationship with Other Programs

- Program Integration (0-10 points)

Relationship to SMSA

- Population (0-10 points)

Scoring ranged from 9 to 87 points. Fifteen areas were selected representing significant areas that deserve special focus in the future. These fifteen areas represent approximately 30 percent of the projects rated. All areas were rated based upon available data pooled by various Division offices. Table 1 presents all projects. It should be noted that some data was not available and thus lowered the project's score. Efforts will be needed to complete the data table in order to upgrade the significant area's list. This will be done in consideration of available resources.

It should be emphasized that the criteria used for selecting significant ground water problem areas is somewhat different from the Mitre model used to select Superfund sites. The criteria used in the GWEMR focuses solely on its impact and relation to ground water, while the Mitre model incorporates additional criteria. However, the Mitre model takes precedence for the selection of Superfund sites.

Significant Problem Areas

Based upon the selection analysis presented above, fifteen (15) areas have been selected. These areas are deemed significant in consideration of their high relative rank and should represent areas in which substantial effort is needed to correct the identified problem(s). Table 2 presents Significant Problem Areas and Figure 1 map locates these areas.

TABLE 1 PROJECT SCORING

Area/Site	Health	Feasibility	Relationship	SMSA	Total
Delaware					
Llangollen Landfill	40	25	10	7	82
Tybouts Corner	30	34	7	7	78
Witco Chemical Co.	20	19	7	7	53
Shelly Farms	15	4	2	1	22
Stauffer Chem. Co.	20	23	5	5	53
New Castle Skel. Plain	U	11	7	7	25
Wildcat Landfill	U	11	7	7	25
Maryland					
Limestone Road Site	U	16	5	1	22
Middletown Road Site	U	11	5	1	17
Sand, Gravel & Stone Site	15	13	5	1	34
Pennsylvania					
West View Water Auth. (under Consent Order	Under Consent Order				
West Ormrod Comm. Ass.	See Heleva Landfill				
Hatfield Boro. Water Auth. (SF Enf. Site)	SF Enforcement Site				
Warminster Hgts. Dev. Co. (SF Enf. Site)	See Fisher & Porter				
Hatboro Sub. Auth. (SF Enf. Site)	See Fisher & Porter				
Phila. Sub. Water Co. (SF Enf. Site)	See Stanley Kessler Company				
Seven Valley Landfill	10	16	5	7	38
Kimberton	15	21	5	10	51

Area/Site	Health	Feasibility	Relationship	SMSA	Total
Blosenski Landfill	U	10	7	10	27
Brodhead Creek	U	18	5	8	31
Bruin Lagoon	30	5	0	0	58
Centre Co. - Kepone Site	15	23	5	6	49
Craig Farms	U	11	2	6	19
Douglesville Disposal Site	U	3	5	5	13
Drake Chemical	U	23	5	8	36
Enterprise Ave	20	23	10	10	63
Fisher & Porter	40	27	10	10	87
Havertown PCP Site	20	11	7	10	47
Heleva Landfill	U	11	5	8	24
Hranica	U	23	5	0	28
Lackawanna Refuse	U	16	5	8	29
Lehigh Electric	20	23	5	8	56
Lindane Dump	U	23	5	4	32
Lord-Shope	U	23	5	7	35
Malvern TCE Site	U	13	5	10	28
McAdoo Ass.	25	23	7	7	62
Metal Bank of America	25	23	10	10	68
Moyer Landfill	U	23	5	7	25
Old City of York Landfill	U	13	5	7	25
Osborne Landfill	U	23	5	5	33
Palmerton Zinc Pile	U	8	5	0	13

Area/Site	Health	Feasibility	Relationship	SMSA	Total
Presque Isle	10	23	5	7	45
Resins Disposal Site	U	23	5	0	28
Stanley Kessler Company	25	23	10	10	68
Voortman Farms	U	6	5	8	19
Wade Site	25	23	7	6	61
Westline	U	13	5	0	18
Virginia					
Roanoke Co./ Matthews Electroplating	20	23	5	6	54
Chisman Creek	U	6	3	0	9
West Va.					
McClintic Wild Life Station	U	15	5	0	20
Fike Chemical Co.	25	23	7	6	61
Koppers Co./ Colliers Landfill	25	3	5	0	38
Follansbee Sludge Fill Area	30	15	7	0	52
Leetown Pesticide Pile	U	18	5	0	23
DC					
None					

TABLE 2 - Significant Problem Areas/Sites

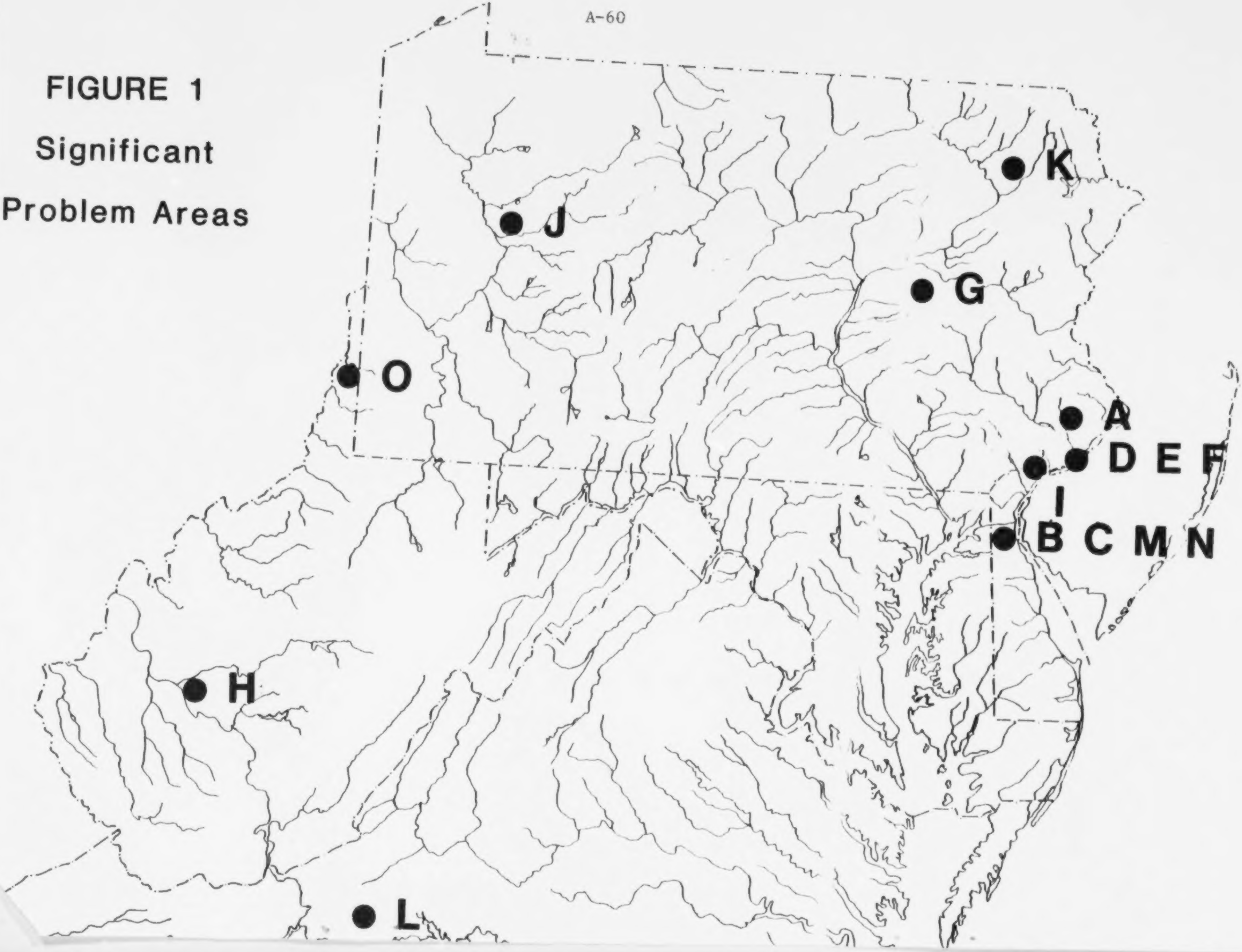
Note: Letters correlate to map.

Letter	Points	Area	State/County
A	87	Fisher & Porter	PA/Bucks
B	82	Army Creek	Del/New Castle
C	78	Tybouts Corner	Del/New Castle
D	77	Stanley Kessler	PA/Phila.
E	68	Metal Bank/Amer.	PA/Phila.
F	63	Enterprise	PA/Phila.
G	62	McAdoo Assoc.	PA/Schuylkill
H	61	Fike Chem. Co.	W.VA/Kanawha
I	61	Wade Site	PA/Chester
J	58	Bruin Lagoon	PA/Butler
K	56	Lehigh Elec.	PA/Lackawanna
L	54	Matthews Elecptg.	VA/Roanoke
M	53	Witco Chem. Co.	Del/New Castle
N	53	Staffer Chem. Co.	Del/New Castle
O	52	Follansbee Sludge	W. VA/Brooke

FIGURE 1

Significant

Problem Areas


K
J
G
O
A
D
E
F
I
B
C
M
N
H
L

Hazardous Waste Problems - RCRA

The most efficient means of characterizing Region III's hazardous waste management program is through the RCRA permitting process. Although current data is sparse, data collection systems continue to be developed which will allow EPA to track hazardous waste activities and assure proper management of hazardous waste facilities.

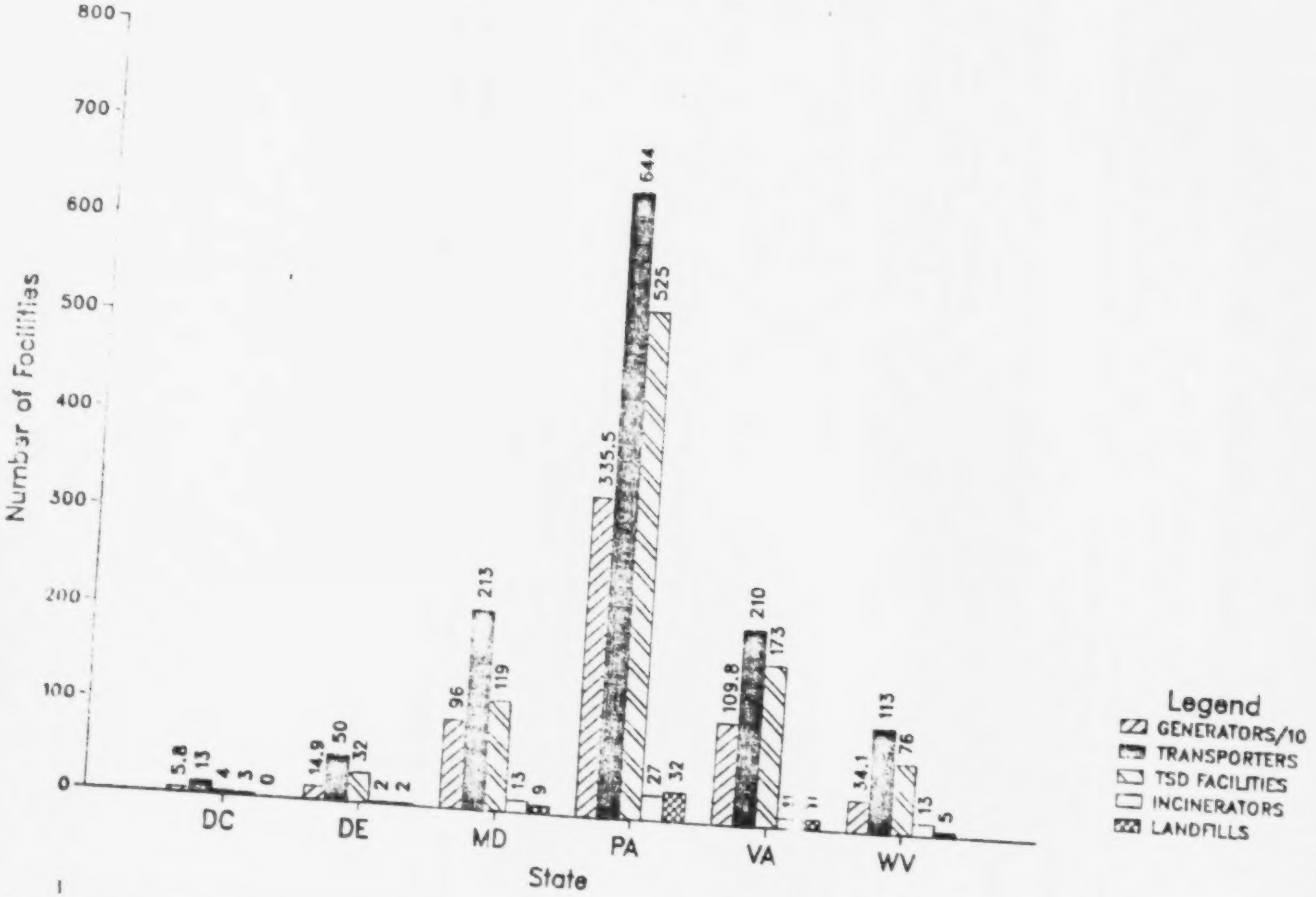
Under RCRA, all persons engaged in hazardous waste activities are required to notify EPA. A total of 7556 hazardous waste activities were reported in Region III. In addition, treatment, storage, and disposal facilities are required to apply for RCRA permits. An initial submittal of 1250 Part A applications were received. After evaluating Part A documents, Region III identified 952 facilities required to submit Part B applications.

Presently, 151 Part B applications have been called in. Additionally, 14 applications have been received for new facilities. Of the permit applications called in, 62 facilities have withdrawn. Region III intends to complete action on all applications called in during FY 1983. Through the permitting process, we intend to bring as many facilities under the RCRA regulations as quickly as possible and weed out improperly managed facilities.

As part of the permitting process, the Region and the States are inspecting facilities that have withdrawn their Part A applications and those that have submitted Part B applications. Additionally, a number of existing facilities are required to monitor groundwater.

Information gathered through these activities provides a data base which will allow the Region to focus in on problem areas and to identify emerging issues.

STATUS OF RCRA FACILITIES



PART B PERMIT APPLICATIONS CALLED-IN
(March 16, 1983)

	Treatment and/ or Storage*	Land Disposal**	Incinerators*
District of Columbia	2	0	0
Delaware	12	2	2
Maryland	11	2	2
Pennsylvania	56	6	6
Virginia	22	2	1
West Virginia	20	2	3
Total	125	14	14

* - Called-in FY '82
** - Called-in FY '83

REGION III RCRA INSPECTIONS

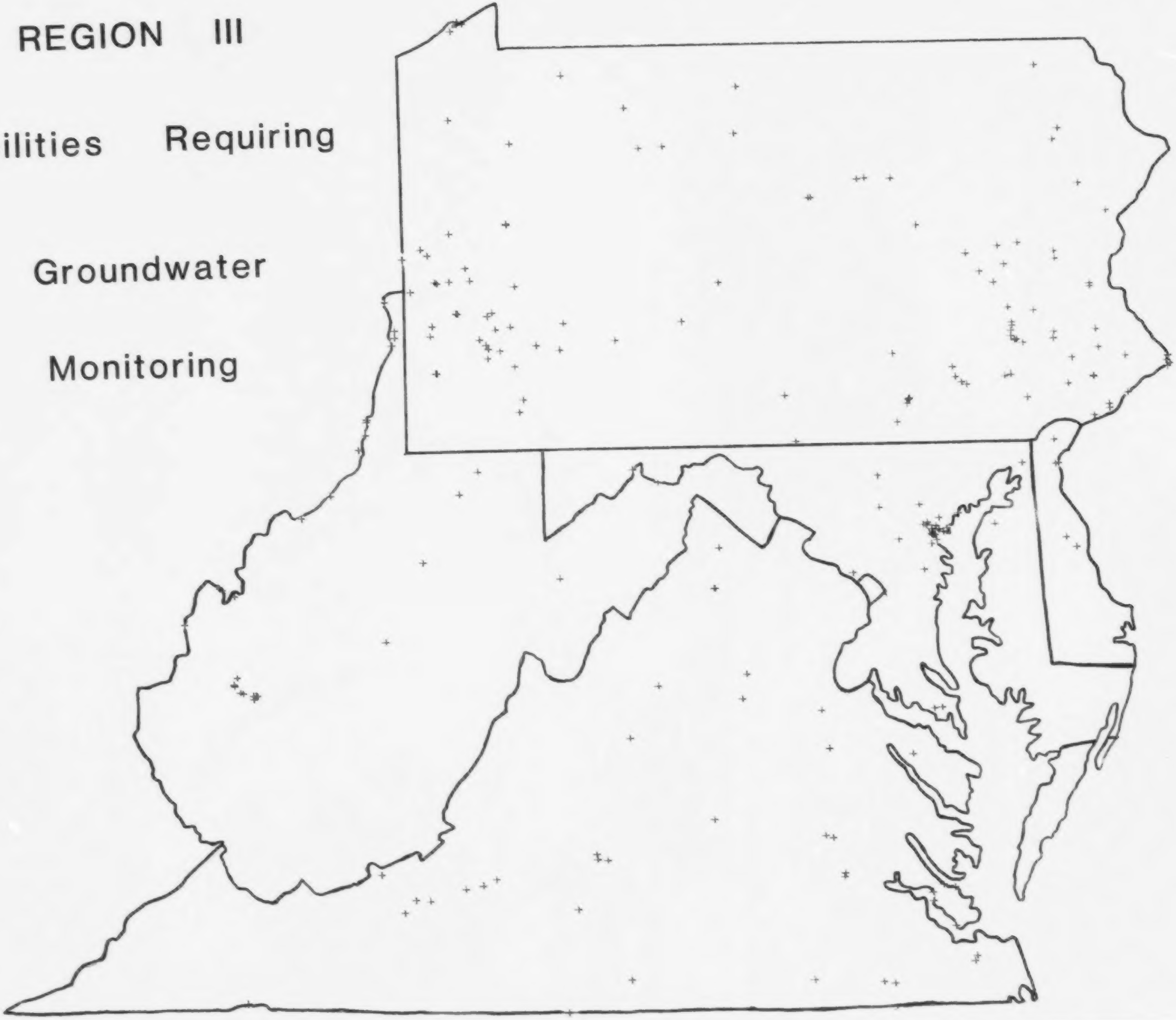
	Part B Submittals		Part A Withdrawals	
	State	EPA	State	EPA
District of Columbia	0	0	0	1
Delaware	0	0	0	0
Maryland	0	0	0	0
Pennsylvania	0	10	12	1
Virginia	0	0	0	0
West Virginia	4	4	3	4
Total	4	14	15	6

REGION III

Facilities Requiring

Groundwater

Monitoring



Region III Required Groundwater Monitoring

	No. of Facilities	No. of Processes
D.C.	0	0
Delaware	3	4
Maryland	24	32
Pennsylvania	88	106
Virginia	33	50
West Virginia	20	32
	168	226

Hazardous Waste Problems - Superfund

NATIONAL PRIORITY LIST SITES
by
HRS SCORE

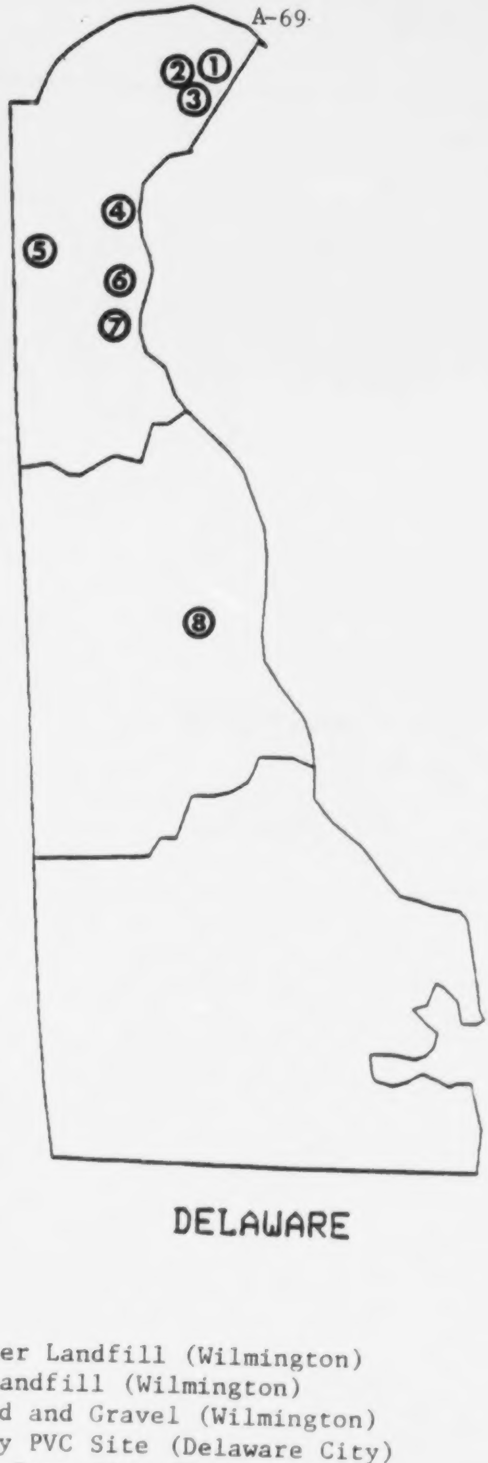
Site Name	HRS	Population
1. Tybouts* - DE	73.67	T
2. Bruin Lagoon - PA	73.11	T
3. Army Creek - DE	69.96	T
4. McAdoo Associates* - PA	63.03	T
5. Osborne Landfill - PA	58.41	R
6. Douglasville Disposal - PA	55.18	T
7. Saltville Waste Disposal Ponds - VA	53.23	T
8. Hranica - PA	51.94	R
9. Lindane Dump - PA	51.62	T
10. Chisman Creek - VA	47.19	R
11. Malvern TCE Site - PA	46.69	T
12. DE Sand & Gravel - DE	46.60	T
13. Palmerton Zinc Pile - PA	46.44	T
14. Heleva Landfill - PA	41.79	T
15. Sand, Gravel & Stone - MD	41.08	R
16. Enterprise Avenue - PA	40.80	U
17. Centre County Kepone Site - PA	39.44	T
18. Lord Shope - PA	38.89	R
19. Drake Chemical - PA	38.52	T
20. Havertown PCP Site - PA	38.34	U
21. Tris Spill Site - DE	38.33	T
22. Resins Disposal Site - PA	37.69	R
23. Moyer Landfill - PA	37.62	T
24. Presque Isle - PA	37.20	U
25. Follansbee Sludge Fill - WV	36.89	T
26. Leetown Pesticide Pile - WV	36.72	R
27. Wade - PA	36.63	U
28. Lackawanna Refuse - PA	36.57	T
29. Fike Chemical - WV	36.30	U
30. WV Ordnance - WV	35.72	R
31. U.S. Titanium - VA	34.78	R
32. Old City of York Landfill - PA	33.93	T
33. Stanley Kessler - PA	33.89	U
34. Metal Bank of America - PA	33.26	U
35. Matthews Electroplating* - VA	31.86	R
36. Westline - PA	31.85	R
37. Brodhead Creek - PA	31.09	T

38. Harvey Knott Drum Site - DE	30.77	R
39. Wildcat Landfill - DE	30.61	T
40. Blosenski Landfill - PA	30.57	T
41. DE City PVC - DE	30.55	R
42. Limestone Road Site - MD	30.54	T
43. New Castle Steel Plant - DE	30.40	T
44. Lehigh Electric - PA	30.26	T
45. Kimberton - PA	29.48	T
46. Middletown Road Site - PA	29.36	T
47. Fischer Porter - PA	29.07	U
48. Craig Farms - PA	28.71	R
49. Voortman Farm - PA	28.62	R

---

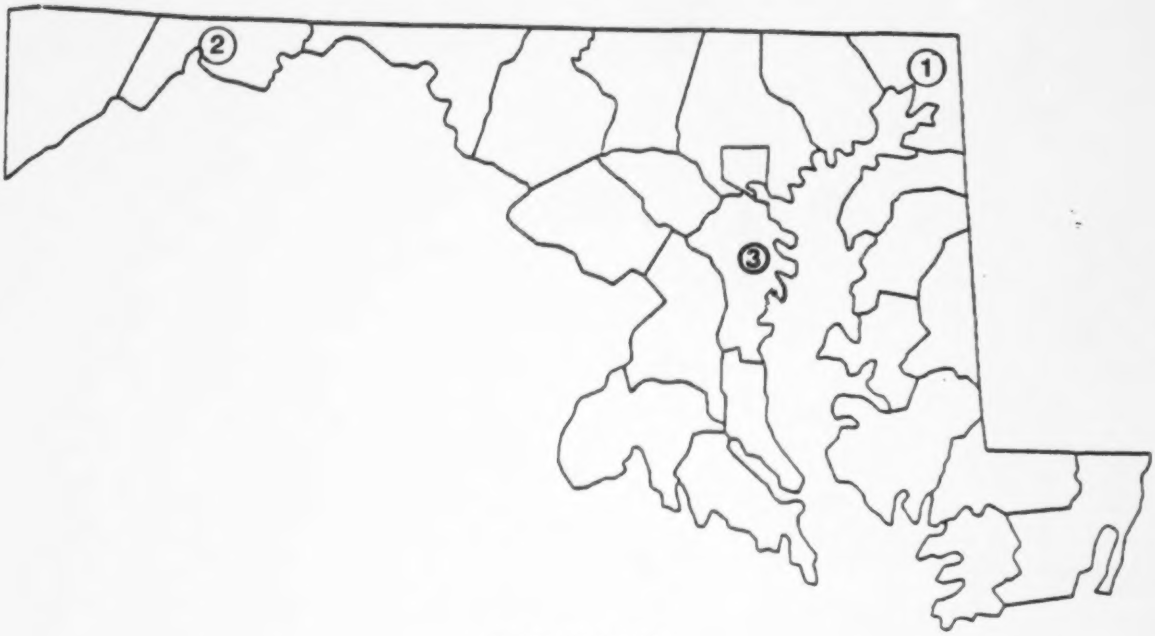
*State Priority Site

R = Rural
T = Town
U = Urban



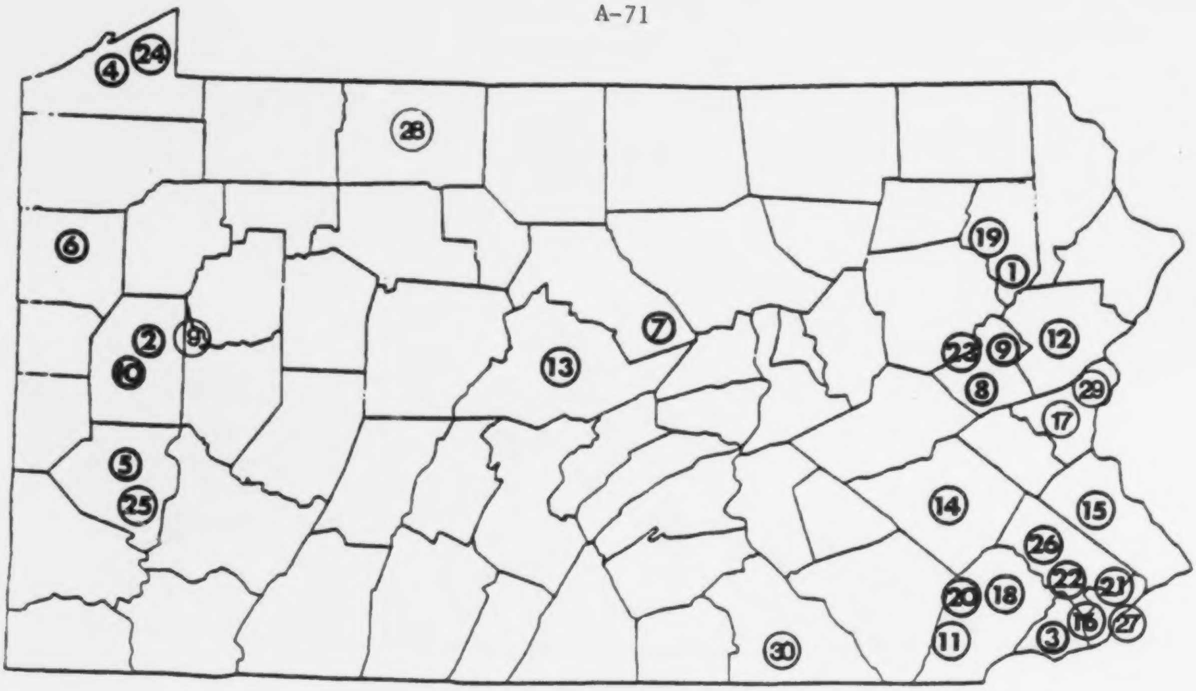
DELAWARE

1. Tybouts Corner Landfill (Wilmington)
2. Army Creek Landfill (Wilmington)
3. Delaware Sand and Gravel (Wilmington)
4. Delaware City PVC Site (Delaware City)
5. Harvey-Knott Drum Site (Kirkwood)
6. New Castle Steel Site (New Castle)
7. Tris Spill Site (New Castle)
8. Wildcat Landfill (Dover)



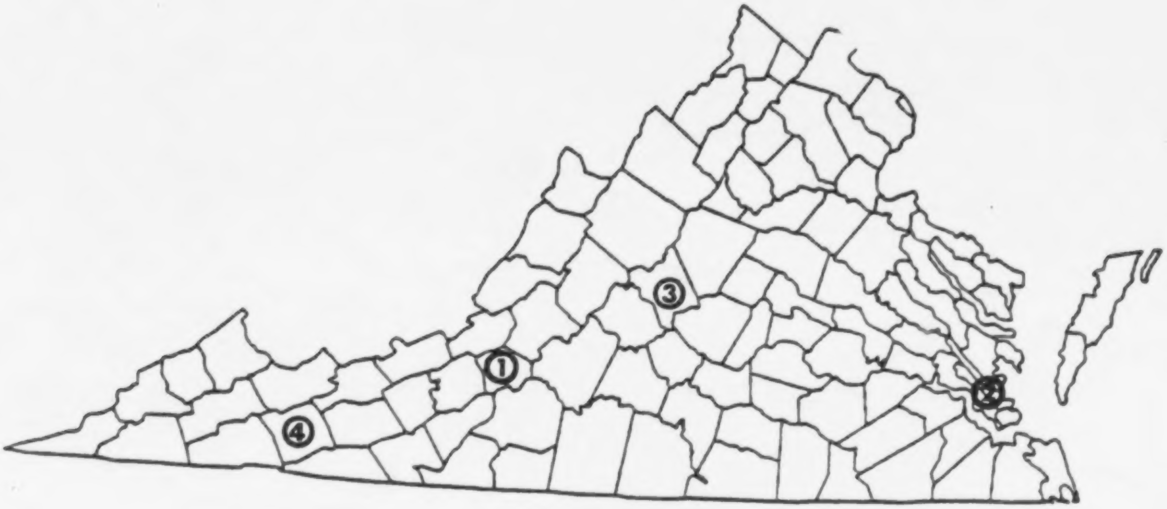
MARYLAND

1. Sand, Gravel and Stone Site (Elkton)
2. Limestone Road Site (Cumberland)
3. Middletown Road Site (Annapolis)



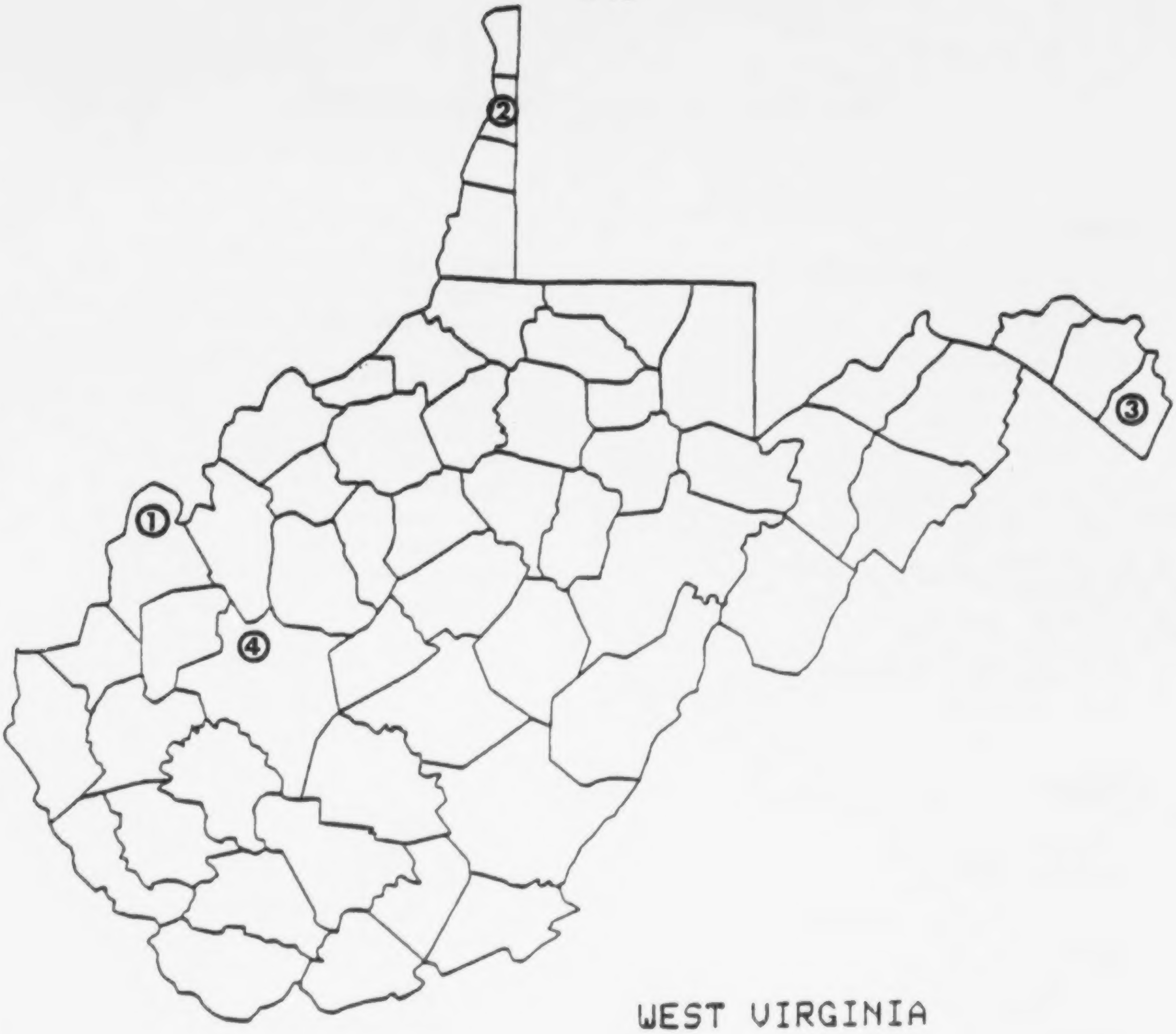
PENNSYLVANIA

1. Lehigh Electric (Old Forge)
2. Bruin Lagoon (Butler Co.)
3. ABM-Wade (Chester)
4. Lord Shope (Erie Co.)
5. Lindane (Allegheny Co.)
6. Osborne (Mercer Co.)
7. Drake (Lock Haven)
8. McAdoo Associates (Hazelton)
9. Craig Farm Drum Site (Parker)
10. Hranica Landfill (Butler Co.)
11. Blosenski Landfill (Chester Co.)
12. Brodhead Creek (Stroudsburg)
13. Centre County Kepone Site
14. Douglasville Disposal Site
15. Fisher and Porter (Warminster)
16. Havertown PCP Site
17. Heleva Landfill (Lehigh Co.)
18. Kimberton
19. Lackawanna Refuse (Scranton)
20. Malvern TCE Site
21. Metal Banks of America (Philadelphia)
22. Moyers Landfill (Collegeville)
23. Palmerton Zinc Pile
24. Presque Isle
25. Resin Disposal Site (Allegheny Co.)
26. Stanley Kessler (Montgomery Co.)
27. Enterprise Avenue (Philadelphia)
28. Westline (McKean Co)
29. Voortman Farms (Lehigh Co.)
30. Old City of York Landfill
    (Seven Valleys)



VIRGINIA

1. Matthews Electroplating (Roanoke Co.)
2. Chisman Creek (York Co.)
3. U.S. Titanium (Piney River)
4. Saltville Waste Disposal Ponds (Saltville)


②
③
①
④
WEST VIRGINIA

1. West Virginia Ordnance (Point Pleasant)
2. Follansbee Sludge Fill Area (Follansbee)
3. Leetown Pesticide Pile (Leetown)
4. Fike Chemical (Nitro)

Sites Where Action Is Planned or Underway
FY'83

RAMPS

- Old City of York Landfill
- Westline
- Wildcat
- Sand, Gravel & Stone
- Limestone Road
- Middletown Road
- Presque Isle
- Heleva Landfill
- Douglasville Disposal
- Malvern TCE
- Kimberton
- Tybouts
- Osborne
- Delaware City PVC
- Delaware Sand & Gravel
- U.S. Titanium
- West Virginia Ordnance
- Army Creek Landfill
- Lackawanna Refuse
- Witco
- Leetown Pesticide
- Moyers
- Havertown PCP
- Blosenski Landfill
- Saltville
- New Castle Steel
- Brodhead Creek
- Palmerton Zinc
- Tris Spill

RI/FS

- Tybouts
- McAdoo (Phase 2)
- Osborne
- Delaware Sand & Gravel
- Drake
- Harvey & Knott
- Leetown Pesticide
- WV Ordnance
- Havertown PCP
- Presque Isle
- Army Creek
- Sand, Gravel & Stone
- Douglasville Disposal
- Moyer Landfill
- Westline
- Blosenski
- Lackawanna Refuse

Design/Construction

- Bruin Lagoon
- Lehigh Electric
- Matthews Electroplating

Enforcement Action Underway

- Fischer & Porter
- Stanley Kessler
- Metal Bank of America
- Fike (Consent Decree signed 11/82)
- Wade
- Resins Disposal Site

Non-Federally Funded Actions

- Saltville Waste Disposal Ponds
- Hranica
- Lindane
- Lord Shope
- Centre County Kepone Site

PESTICIDE PROBLEMS

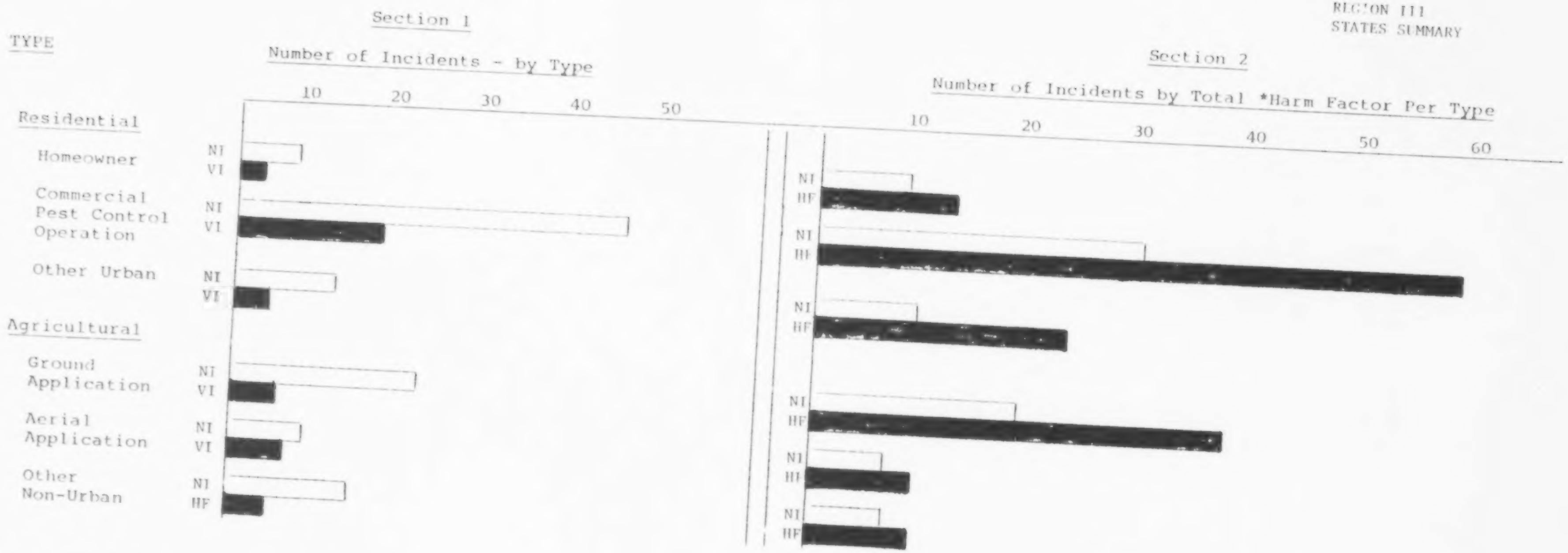
Chart A

Section 1 is a bar graphic of the total number of incidents per site investigated by a state in relation to the total of confirmed mis-use incident(s) as a result of those investigations.

Section 2 is a bar graphic indicating the total number of incidents as related to the total harm factor. Total harm factor based on Final FY 1982 Cooperative Agreement Program Guidance, PTSED, Headquarters (see attachment).

CHART A

REGION III
STATES SUMMARY


Section 1

Number of Incidents - by Type

Section 2

Number of Incidents by Total *Harm Factor Per Type

N.I. - Total Number of Incident Investigations

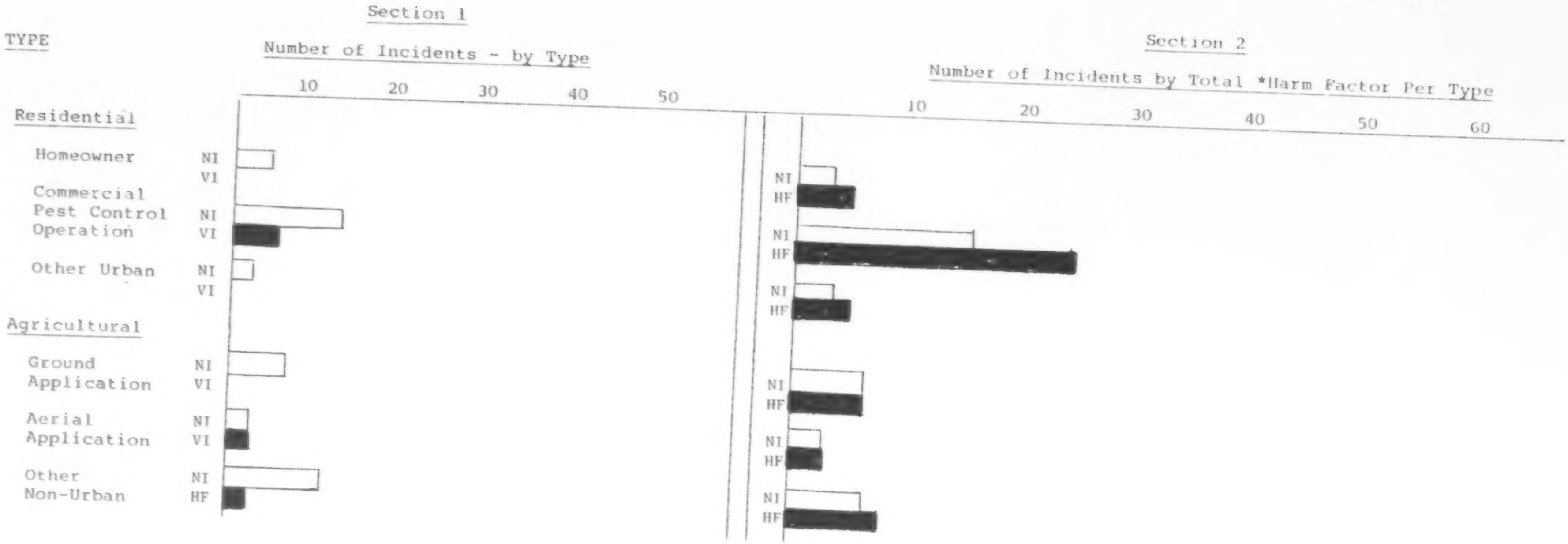
V.I. - Number of Confirmed Mis-Use

H.F. - Total Harm Factor

* Harm Factor assigned per type based on Final FY82 Cooperative Agreement Program Guidance, PTSED, Headquarters

CHART A

PENNSYLVANIA



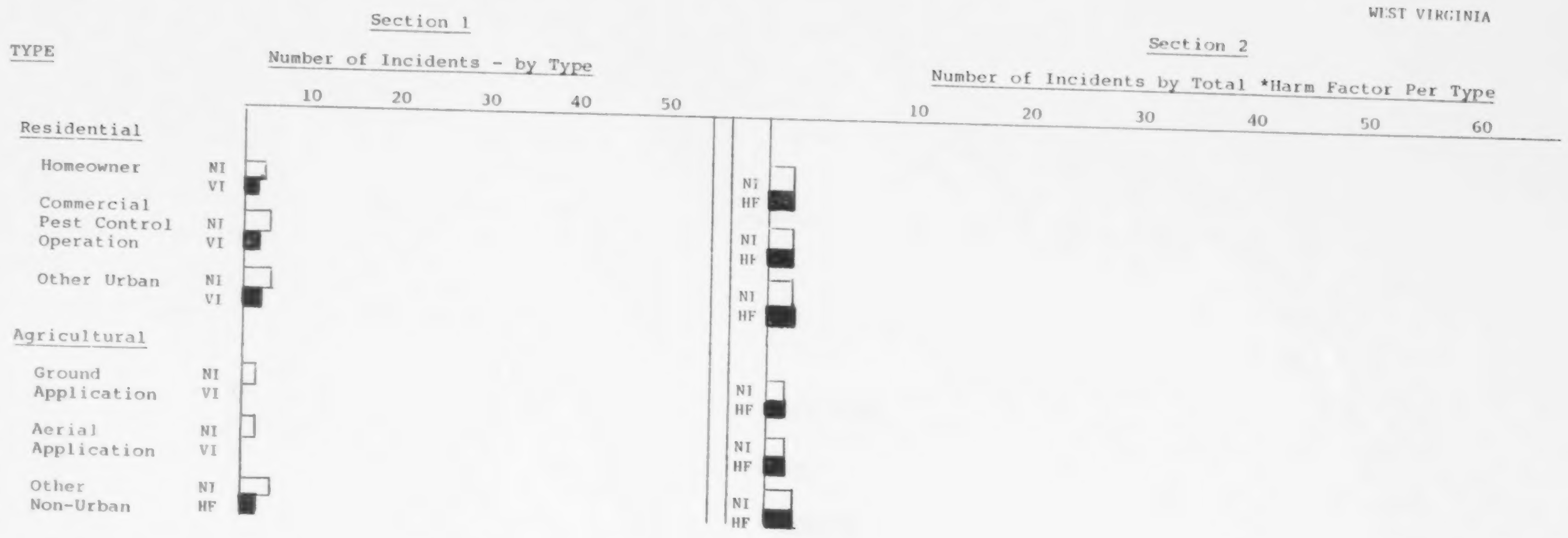
N.I. - Total Number of Incident Investigations

V.I. - Number of Confirmed Mis-Use

H.F. - Total Harm Factor

* Harm Factor assigned per type based on Final FY82 Cooperative Agreement Program Guidance, PTSED, Headquarters

CHART A



N.I. - Total Number of Incident Investigations

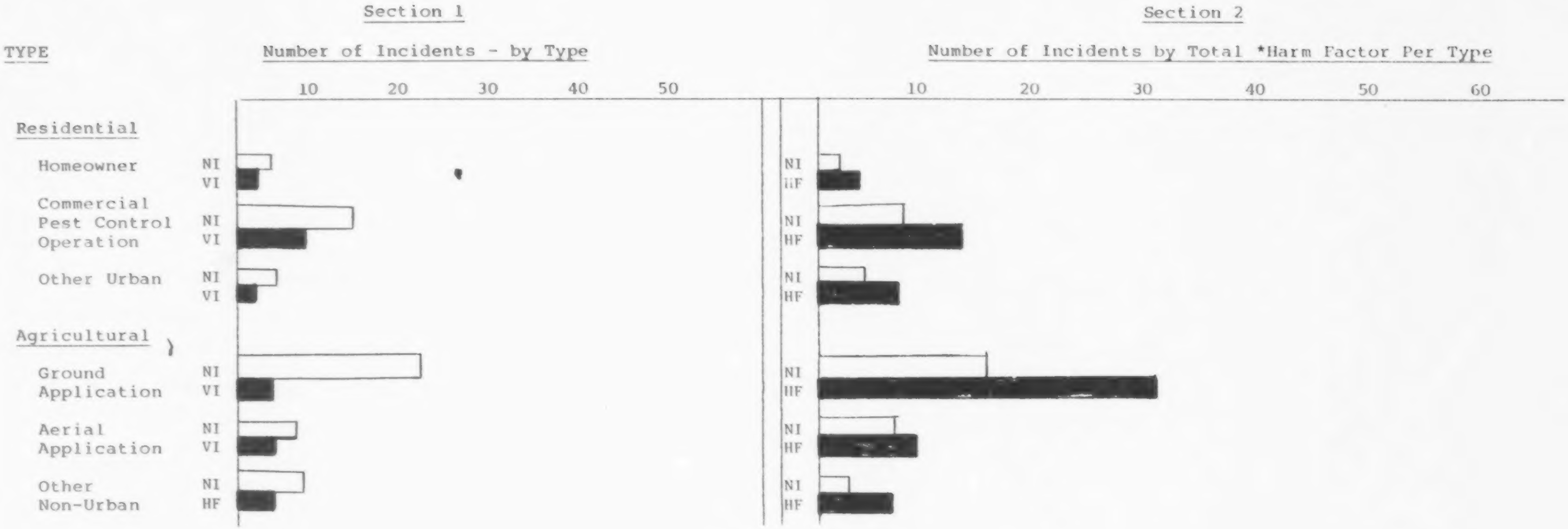
V.I. - Number of Confirmed Mis-Use

H.F. - Total Harm Factor

* Harm Factor assigned per type based on Final FY82 Cooperative Agreement Program Guidance, PTSED, Headquarters

VIRGINIA

CHART A



N.I. - Total Number of Incident Investigations

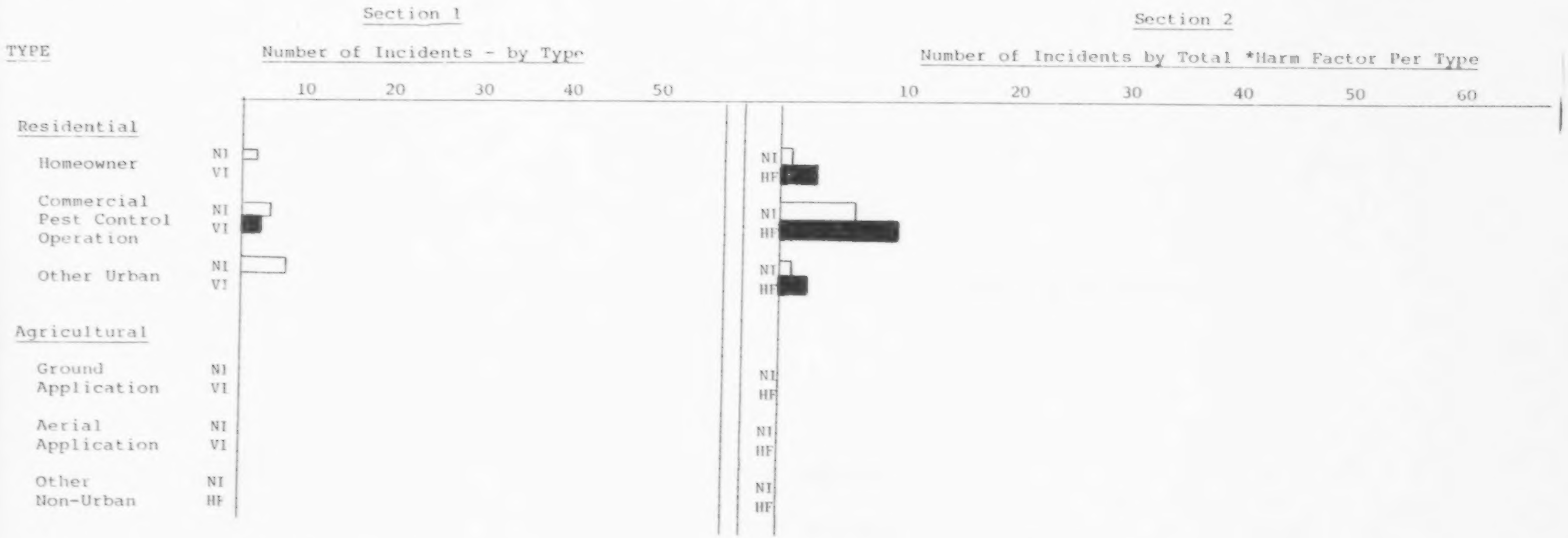
V.I. - Number of Confirmed Mis-Use

H.F. - Total Harm Factor

* Harm Factor assigned per type based on Final FY82 Cooperative Agreement Program Guidance, PTSED, Headquarters

DISTRICT OF COLUMBIA

CHART A



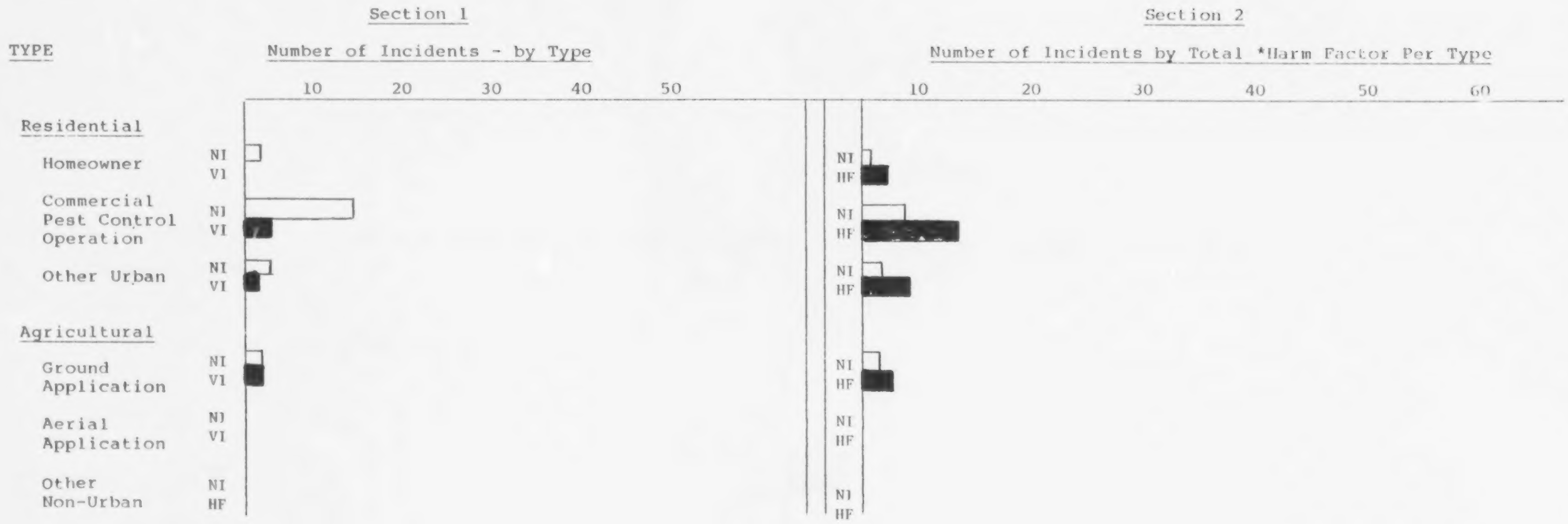
N.I. - Total Number of Incident Investigations

V.I. - Number of Confirmed Mis-Use

H.F. - Total Harm Factor

* Harm Factor assigned per type based on Final FY82 Cooperative Agreement Program Guidance, PTSED, Headquarters

CHART A



N.I. - Total Number of Incident Investigations

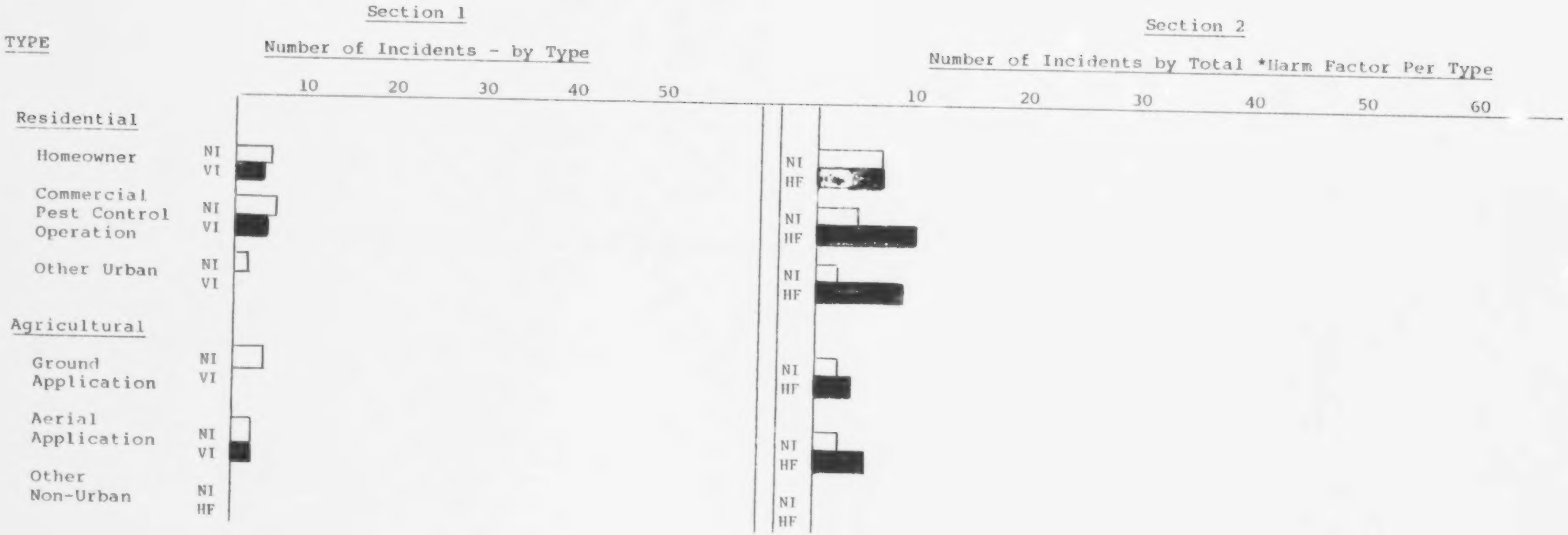
V.I. - Number of Confirmed Mis-Use

H.F. - Total Harm Factor

* Harm Factor assigned per type based on Final FY82 Cooperative Agreement Program Guidance, PTSED, Headquarters

CHART A

DELAWARE



N.I. - Total Number of Incident Investigations

V.I. - Number of Confirmed Mis-Use

H.F. - Total Harm Factor

* Harm Factor assigned per type based on Final FY82 Cooperative Agreement Program Guidance, PTSED, Headquarters

Chart B

Section 1 lists actual numbers of incidents per site investigated by a state as related to the total number of confirmed pesticide mis-use incident(s), and the percentage of mis-use by type.

Section 2 again lists actual numbers of incidents. Sections 1 and 2 do not logically match in that alleged pesticide mis-use incidents reported to a state and investigated by the concerned state may prove not to be pesticide related, or an incident may be investigated but a state inspector may be unable to prove a mis-use due to inconclusive evidence, although harm may have occurred.

Date

Five (5) States and the District of Columbia voluntarily agreed, prior to FY 1982, to furnish the Regional Pesticide Office information as to date, type, adverse effects and enforcement action, if any, on all incidents investigated by the states on a Summary Form devised and adopted for use by the States. As per the 1982 Enforcement Agreements, States are not committed to any reporting requirements, except for reporting total numbers on a quarterly basis. All States have agreed to maintain files on all mis-use investigations and make the files available for EPA review.

CHART B

REGION III
STATES SUMMARY

TYPE	Section 1 Number of Incidents - by Type Number of Incidents	Number of Mis-use Confirmed by Investigation	Percent of Mis-use by Type	Section 2 Number of Incidents-by Total Harm Per Type Total Incidents	*Total Harm Factors	Percent of Harm by Type
Residential						
Homeowner	12	3	7.5	12	16	9.7
Commercial Pest. Control Operation	48	20	50.0	33	61	36.9
Other Urban	17	3	7.5	13	26	15.7
Agricultural						
Ground Application	25	4	10.0	19	39	23.8
Aerial Application	8	6	15.0	8	11	6.7
Other Non-Urban	16	4	10.0	9	12	7.2
TOTAL	126	40	100.0	94	165	100.0

*Harm Factors assigned per incident based on Final FY82 Cooperative Agreement Program Guidance, PTSED, Headquarters

CHART B

TYPE	Section 1 Number of Incidents - by Type Number of Incidents	 Number of Mis-use Confirmed by Investigation	 Percent of Mis-use by Type	Section 2 Number of Incidents-by Total Harm Per Type Total Incidents	 *Total Harm Factors	 Percent of Harm by Type
Residential						
Homeowner	3	0	0	3	4	9.8
Commercial Pest. Control Operation	12	4	57.0	12	22	53.7
Other Urban	2	0	0	2	3	7.3
Agricultural						
Ground Application	4	0	0	4	4	9.8
Aerial Application	2	2	28.6	2	2	4.8
Other Non-Urban	10	1	14.3	5	6	14.6
TOTAL	33	7	100%	28	41	100%

*Harm Factors assigned per incident based on Final FY82 Cooperative Agreement Program Guidance, PTSED, Headquarters

CHART B

TYPE	Section 1 Number of Incidents - by Type			Section 2 Number of Incidents-by Total Harm Per Type		
	Number of Incidents	Number of Mis-use Confirmed by Investigation	Percent of Mis-use by Type	Total Incidents	*Total Harm Factors	Percent of Harm by Type
Residential						
Homeowner	2	1	5.9	2	3	4.9
Commercial Pest. Control Operation	13	7	41.3	6	12	19.7
Other Urban	4	1	5.9	4	8	12.1
Agricultural						
Ground Application	17	3	17.6	12	29	47.6
Aerial Application	4	3	17.6	4	5	8.1
Other Non-Urban	4	2	11.7	2	4	6.6
	—	—	——	—	—	——
TOTAL	44	17	100%	30	61	100%

*Harm Factors assigned per incident based on Final FY82 Cooperative Agreement Program Guidance, PTSED, Headquarters

CHART B

TYPE	Section 1			Section 2		
	Number of Incidents - by Type			Number of Incidents-by Total Harm Per Type		
	Number of Incidents	Number of Mis-use Confirmed by Investigation	Percent of Mis-use by Type	Total Incidents	*Total Harm Factors	Percent of Harm by Type
Residential						
Homeowner	1	0	0	1	2	15.4
Commercial Pest. Control Operation	4	1	100	4	8	61.5
Other Urban	6	0	0	2	3	23.1
Agricultural						
Ground Application						
Aerial Application						
Other Non-Urban						
TOTAL	11	1	100%	7	13	100%

*Harm Factors assigned per incident based on Final FY82 Cooperative Agreement Program Guidance, FTSED, Headquarters

CHART B

MARYLAND

TYPE	Section 1			Section 2		
	Number of Incidents - by Type			Number of Incidents-by Total Harm Per Type		
	Number of Incidents	Number of Mis-use Confirmed by Investigation	Percent of Mis-use by Type	Total Incidents	*Total Harm Factors	Percent of Harm by Type
Residential						
Homeowner	1	0	0	1	2	10
Commercial Pest. Control Operation	12	4	66.6	5	10	50
Other Urban	2	1	16.7	2	5	25
Agricultural						
Ground Application	1	1	16.7	1	3	15
Aerial Application	0	0	0	0	0	0
Other Non-Urban	0	0	0	0	0	0
	—	—	—	—	—	—
TOTAL	16	6	100%	9	20	100%

*Harm Factors assigned per incident based on Final FY82 Cooperative Agreement Program Guidance, PTSED, Headquarters

CHART B

TYPE	Section 1 Number of Incidents - by Type			Section 2 Number of Incidents-by Total Harm Per Type		
	Number of Incidents	Number of Mis-use Confirmed by Investigation	Percent of Mis-use by Type	Total Incidents	*Total Harm Factors	Percent of Harm by Type
Residential						
Homeowner	2	1	20	3	3	15
Commercial Pest. Control Operation	5	3	60	4	7	35
Other Urban	1	0	0	1	5	25
Agricultural						
Ground Application	2	0	0	1	2	10
Aerial Application	1	1	20	1	3	15
Other Non-Urban	0	0	0	0	0	0
	—	—	—	—	—	—
TOTAL	11	5	100%	10	20	100%

*Harm Factors assigned per incident based on Final FY82 Cooperative Agreement Program Guidance, PTSED, Headquarters

CHART B

TYPE	Section 1 Number of Incidents - by Type			Section 2 Number of Incidents-by Total Harm Per Type		
	Number of Incidents	Number of Mis-use Confirmed by Investigation	Percent of Mis-use by Type	Total Incidents	*Total Harm Factors	Percent of Harm by Type
Residential						
Homeowner	2	1	25	2	2	20
Commercial Pest. Control Operation	2	1	25	2	2	20
Other Urban	2	1	25	2	2	20
Agricultural						
Ground Application	1			1	1	10
Aerial Application	1			1	1	10
Other Non-Urban	2	1	25	2	2	20
TOTAL	10	4	100%	10	10	100%

*Harm Factors assigned per incident based on Final FY82 Cooperative Agreement Program Guidance, PTSED, Headquarters

Table 3: List of Suggested Weights for Harm Resulting from Pesticide Use

A. Fishkills

Weight	Harm
2	A fishkill of less than 200
5	A fishkill of at least 200 but less than 1,000
10	A fishkill of at least 1,000 but less than 10,000
25	A fishkill of at least 10,000 but less than 100,000
50	A fishkill of more than 100,000

B. Losses of crops, livestock and posessions

Weight	Harm
1	Animals or plants show symptoms of pesticide exposure, but fully recover
2	A loss valued at less than $500
5	A loss valued between $500 and $4,999
10	A loss valued between $5,000 and $19,999
25	A loss valued at $20,000 or more

C. Harm to Human Beings

Weight	Harm
1	Exposure of a child or adult to a pesticide; no specific harm or symptoms are observed
2	Ingestion of pesticide by a child; no specific symptons are observed
3	Short-term symptons of pesticide poisoning (less than 4 hours); no consultation with M.D. or hospital visit

Table 3: (Con't)

Weight	Harm
4	Symptoms of pesticide poisoning; consulted M.D. or went to emergency room. Symptoms disappear within 4 hours.
7	Longer term symptoms of pesticide poisoning (more than 4 hours); no consultation with M.D. or hospital visit.
10	Symptoms of pesticide poisoning; short term illness of more than 4 hours but no more than two days. Consulted M.D. or went to emergency room.
20	Symptoms of pesticide poisoning; an illness of more than 2 but less than 7 days. Consulted M.D. or went to emergency room.
35	Symptoms of pesticide poisoning which persist between 7 and 20 days; consulted M.D. or went to emergency room.
50	Symptoms of pesticide poisoning persist 3 weeks or longer; consulted physician or went to emergency room.
100	Fatality due to pesticide poisining.

D. Contamination of Other Objects

Weight	Harm
2	Minor contamination or food, feed, or water supply. No subsequent adverse symptoms in humans or animals.
2	Moderate contamination of non-food items (e.g., furniture, clothing, etc.), but no subsequent human or animal exposure resulting in adverse symptoms.

Table 3: (cont'd)

Weight	Harm
5	Significant contamination of food, feed or water supply, but no human or animal exposure resulting in adverse symptoms.
5	Extensive contamination of non-food items, presenting risk of significant human exposure, but no observed harm or symptoms.
---	If contamination of food, feed or other object resulted in human or animal exposure leading to specific symptoms, assign harm weights based on nature of harm (See A-C above)

E. Unregistered Use of Pesticide

Weight	Harm
2	Unregistered use -- no observed harm, symptoms or contamination.
---	If harm or contamination occurred, assign harm weight based on nature of harm (See A-D above)

F. Improper Storage or Disposal

Weight	Harm
2	Improper storage or disposal -- no observed harm, symptoms or contamination.
---	If specific harm or contamination occurred, assign weights based on nature of harm (See A-D above)

Appendix B.

Analyses of Regional Problems

Introduction

Appendix "B" contains a detailed analyses of the problem and probable solution(s) to the following four Regional problems which were considered to be significant enough to warrant this in-depth analyses:

a. Violations of ozone standards

b. Surface water pollution by acid mine drainage

c. Non-point source pollution by nutrients and sediments from agriculture

d. The development of a Regional ground water data base

VIOLATIONS OF THE OZONE STANDARD

Ozone is the pollutant which is most frequently reported in violation of primary standards and this occurs over larger geographic areas than any other pollutant. During 1980 and 1981, the standard was exceeded in New Castle County, DE, the Disirct of Columbia, Anne Arundel County, Baltimore county and city, Cecil County, Montgomery County, Harford County, Prince George's County, Howard County, Maryland, Allegheny County, Lehigh County, Beaver County, Northampton County, Bucks County, Washington County, Lancaster County, Lawrence County, Westmoreland County, Berks County, Philadelphia County, Lackawanna County, and York County in Pennsylvania, Arlington County, Fairfax County, Hanover County and Henrico County in Virginia. Extensions for 1987 compliance dates have been granted for Metropolitan areas surrounding Philadelphia, Baltimore, Pittsburgh, Allentown, PA, Washington, D.C. and Wilmington, DE. Attainment by 1987 has been demonstrated for all metropolitan areas except Philadelphia. For Washington, D.C., it appears that it will be possible to attain the standard, but the SIP submittal has not been reviewed by EPA at the time of this writing because the submission is not yet complete.. The Maryland and Virginia portions were submitted separately, and so do not suffer from this problem. It appears that the reductions predicted to be necessary by the model cannot be obtained in Philadelphia without additional control measures. This problem is compounded by the State of Pennsylvania's failure to enact a program for inspection and maintenance of motor vehicle controls which further reduces the available reductions in organic compounds needed to meet the ozone standards. A lawsuit on this issue and Pennsylvania's failure to comply with a Federal Court order have resulted in imposition of sanctions. No plans have been required for the Scranton/Wilkes Barre, PA area, but recent data indicates that there may be a problem in this area.

Modeling future pollution levels is not an exact science, but the need to model chemical as well as physical process makes ozone modeling especially difficult. There is therefore a possibility that the ozone standard may not be met where it is predicted to be met, in which case sanctions might be applied under the 1977 Clean Air Act amendments. There is also a possibility that the standard would be met in Philadelphia in spite of the modeled conclusion that there will be a shortfall in available controls. An attempt to further refine this modeling is contained in the northeast corrider regional modeling project.

Management for Environmental Results therefore consists of the following actions:

1. Tracking of ozone levels in all non-attainment areas as controls are implemented to assure that ozone reductions occur which are commensurate with emission reductions achieved. If any shortfalls are observed in ambient ozone reductions, any needed replanning should be done prior to the 1987 attainment deadline (unless that deadline is modified by Congress). If available, the more sophisticated Airshed and Regional models should be employed to assess progress.

2. The issue of inspection/maintenance in Pennsylvania should be settled by the State as required by the Court. The matter would then come under EPA's normal administrative proceedings. In this context, the ozone levels for Philadelphia and vicinity should be carefully tracked to check for changes in required reductions which could change the control requirements. (Note that the Clean Air Act requires I/M as a condition for an extension to 1987).

Status of Processing 1982 Ozone/CO SIPs

1. Delaware - Full approval.

2. Virginia Portion of Metro DC - Full approval based on draft submittal.

3. District of Columbia - Portions of the D.C. Ozone SIP were submitted in December, 1982. At the time of this writing, the submittal is not yet complete so a detailed review by EPA has not ben completed so no detailed discussion is included in this document. Due to its similarity to the Maryland and Virginia SIP's for the National Capitol AQCR, the reader can obtain the flavor of the SIP by referring to those discussions.

4. Maryland Portion of Metro DC - Approval of all portions except for disapproval of the I/M portion.

5. Maryland (Baltimore) - Approval of all portions except for disapproval of the I/M portion.

6. Pennsylvania:

    a. Pittsburgh - Disapproval of I/M and public hearing requirements, approval of all remaining portions.

    b. Allentown-Bethlehem-Easton - same as for Pittsburgh.

    c. Philadelphia - Diapproval of I/M, public hearing requirements, attainment demonstration, stationary source control measures for 100 tons per year sources, and reasonable further progress portions. Approval of remaining portions of the SIP.

This listing of SIP status is current as of the time of its writing. Where deficiences are noted, Region III will be working with the State involved to remedy them. It is therefore possible that some of the deficiences may be corrected prior to this report being distributed. An attmept will be made to update this document until its final date of publication, but at some point in the process it will be necessary to go to print with what is available. Changes that occur after that time cannot be reflected here.

PENNSYLVANIA

Pennsylvania is designated as nonattainment state-wide. Three urbanized areas, Philadelphia, Pittsburgh, and Allentown-Bethlehem-Easton, received extensions of the attainment date. This encompasses a 12 county area. The remainder of the State is either rural or projected for attainment by December 31, 1982 though later date could add Scranton/Wilkesbarre to planning areas. For the three urbanized areas, the planning commissions in each area were designated as the lead transportation/air quality agency, responsible for development of the transportation portion of the SIP. The Pennsylvania Department of Environmental Resources (DER) was responsible for stationary source portions of the SIP, and for providing information and support to the local agencies. In addition, DER also retained overall responsibility for 1982 Ozone SIP's. Another requirement for 1982 Ozone SIP's is the commitment of an I/M program. This program was to have been implemented in the three urbanized areas where extensions of the attainment date were granted. The responsibility for this program remains with the State.

Inspection/Maintenance

All major urban areas that needed an extension beyond 1982 to attain the standards for O_3 or CO were required to include vehicle inspection/maintenace (I/M) as part of the 1979 SIP revision. The requirements for the 1982 SIP revision include any elements which remain to complete an acceptable I/M program. Pennsylvania made commitments to an I/M program for Philadelphia and Pittsburgh in Consent Agreement which resulted from a suit on Pennsylvania's failure to implement I/M. An I/M program was developed and submitted as part of Pennsylvania's 1979 SIP revision, including a commitment to I/M in the Allentown-Bethlehem-Easton area also. This program consisted of a detailed schedule for preparation and implementation of an I/M program, and the enabling legislation for this program. None of EPA's specific requirements were part of the 1979 revision, although it contained commitments and schedules for development. This program was approved by EPA conditioned on the retention by the Goveror of the authority to preapred and implement and I/M program.

Since the approval of the 1979 SIP, the State Legislature has acted to prohibit any Pennsylvania agencies from implementing an I/M program. Therefore, the commitments in the 1979 SIP are no longer adequate. In addition, none of the specific I/M requirements have been satisfied. Therefore, Pennsylvania's I/M program does not meet the requirements for an acceptable program. EPA has proposed the disapproval of the I/M portion of the 1982 Ozone and CO SIP revision. Throughout Pennsylvania's SIP, the demonstrations of attainment and showing of reasonable further progress (RFP) include reductions from an I/M program. As discussed above, this program is not being implemented. Therefore, the demonstrations of attainment and RFP in this SIP revision show greater reductions than are actually being achieved. Although this may affect the approvability of these items, this effect is not discussed in detail in this section.

SOUTHEASTERN PENNSYLVANIA AREA

Demonstration of Attainment/Modeling

The SIP includes valid and adequate input data for the City-Specific EKMA model in the following categories

1. Mixing height rise (median of '79 - '80 data used for 1981)
2. Transport of Ozone
3. Precursor Transport
4. Post 8 a.m. Emissions (subcounty emission density, including emission fractions).
5. Reactivity (Default Values)
6. NMHC/NO_x Radio (design day average or median value).

Results of the modeling study are summarized in Table 1. The EKMA analysis for the design day (June 24, 1980) indicates a design value of 0.171 ppm measured at the Trenton, N.J. site, and a required reduction of VOC emissions of 44 percent. Since the implementation of all reasonably available control measures results in a total reduction of 38 per cent by 1987, it is evident that the plan does not demonstrate attainment. EPA proposed approval of the modeling analysis, but disapproval of the demonstration of attainment. Negotiations to remedy this problem are in progress.

Reasonable Further Progress

The State's demonstration of reasonable further progress (RFP) consists of a graphical presentation of the total VOC emissions for 1978, 1980 and 1987 with no intermediate dates. The RFP curve fails to demonstrate attainment by December 31, 1987, and fails to indicate the date by which attainment is anticipated. EPA proposed to disapprove the reasonable further progress portion of the SIP since it fails to indicate the date by which attainment is anticipated.

Seventeen major sources of VOC emissions in Philadelphia were identified. Adequate controls have been implemented in all but four major sources. These sources are:

Gulf Oil Co. - (barge loading - 700-900 TPY)
Smith-Kline Beckman (Pharmaceutical - 179 TPY)
E. C. Incinerator (municipal - 134 TPY)
N. W. Incinerator (municipal - 140 TPY)

Philadelphia's Air Management Services has assured EPA that operating procedures for the two city incinerators (high temperature operation plus combustion in secondary chambers) are adequate to provide RACT control of VOC emissions, and has committed to the study of RACT control measures for the Gulf Oil Company and Smith-Kline Beckman sources.

For the remaining portion of the AQCR, the State has indicated that three major sources not covered by CTG's exist. These sources are:

1. BP Oil Co. - (barge loading)
2. Sun Oil Co. - (barge loading)
3. Witco Chemical Co. - (chemicals)

The State is evaluating RACT control on these sources. However, no official commitments to implement RACT regulations from either AMS or the State have been received. Therefore, EPA proposed this portion for disapproval pending official submittal of commitments with schedules for adotpion of RACT for these sources.

Transportation Control Measures

The Delaware Valley Regional Planning Commission (DVRPC) was the lead agency in the development of the transportation portion of the Philadelphia SIP. The Technical Advisory Committee for Transportation, which included representatives of local governments and transportation agencies in both Pennsylvania and New Jersey, performed a preliminary analysis of 75 measures, which encompassed all of the reasonably available transportation measures (RATM) identified in Section 108(f) of the Clean Air Act. Of the original 75 measures, 33 measures (15 in Pennsylvania, 18 in New Jersey) were analyzed in detail and recommended for approval by the DVRPC Board, which subsequently approved the recommended measures for submission to the State.

The total VOC emission reduction resulting from the measures included in the SIP was determined to be 1980 kg/day in 1987, thus providing 4.5 percent of the regional shortfall, or 4.2 percent of the shortfall in the Pennsylvania portion. 37 additional measures were recommended for further consideration in the event that additional emission reductions are required. Adequate commitments to the recommended measures have been included in Pennsylvania's SIP submittal. The study results and recommendations were reviewed by the public and all State and local agencies in the region. Evaluation and comments were included in the SIP revision.

Basic Transportation Needs have been adequately addressed in the SIP, as part of the basic planning process performed by DVRPC and the State. Full public participation was provided and encouraged throughout the development of the transportation control plan.

EPA proposes to approve the transportation portion of the Philadelphia SIP based on the review above.

THE SOUTHWEST PENNSYLVANIA AREA (PITTSBURGH)

The demonstration of attainment for the Southwestern Pennsylvania area consisted of the use of the City-Specific Empirical Kinetic Modeling Approach (EKMA), as recommended by EPA.

Ambient air quality data was provided by the Allegheny County Bureau of Air Pollution Control (BAPC) for Allegheny County and by the Department for the remainder of the planning region. A list of ozone exceedances for the years 1979, 1980, and 1981, by site, was prepared. The Department examined the wind data for those days with ozone exceedances to determine those days which needed to be modeled. The days selected for modeling also modeled if the wind data indicated stagnant or variable wind conditions.

Data from the upwind sites for the days being modeled were used to determine the quantity of ozone transported into the urban area. The control requirement selected for the Southwestern Pennsylvania Regional Planning Commission region was a 36.7% emission reduction. However these figures did not conform to guidance from EPA dated December 3, 1981 ("Effects of Chemistry and Meteorology on Ozone Control Calculations Using Simple Trajectory Models and the EKMA Procedure"). In this guidance, EPA indicated that the OZIPP computer model should predict the maximum ozone exceedance which occurred on the day of interest.

If the predicted ozone exceedance is within ± 30%, the EKMA analysis performed on the computer generated ozone isopleths is acceptable. In the case which yielded 36.7%, the OZIPP model predicted a maximum ozone level of 0.099 ppm. This figure was not within 30% of the maximum ozone exceedance measured on July 20, 1979 (0.155 ppm).

Therefore, the Department performed two additional computer simulations. In the first simulation the value for the maximum height was increased. This analysis would require a 35.2% emission reduction. In the second simulation, the value for aloft transported ozone was changed. This analysis would require a 37.5% emission reduction. In both the 35.2 and 37.5% cases, the OZIPP computer model predicted a maximum ozone exceedance measured on July 20, 1979 (0.155 ppm).

These numbers (35.2% and 37.5%) do not indicate the error range found in the model. The EKMA procedure is neither as precise or as accurate as these variations indicate. In accordance with the EPA mandated EKMA methodology, either the 35.2% or the 37.5% figure is acceptable. A summary of the data used in this EKMA anlaysis is contained in Table 2.

In developing the SIP for the Pittsburgh area, the Departent used the lower reduction requirement (35.2%). A 35.2 percent reduction translates to a 50,665 ton reduction by 1987 (based on the 1980 emission inventory). The demonstration for the Southwestern Pennsylvania portion demonstrates that this reduction in emissions will occur, and that attainment will occur by 1987. Expected reductions will amount to 57,452 tons, providing a margin of 5,787 tons by 1987. The methodology used by DER in this EKMA analysis has been reviewed by EPA and conforms with EPA guidelines.

This demonstration of attainment claimed reductions from I/M, which is not being implemented. If final disapproval action on I/M is taken, demonstration will be reevaluated to ascertain whether or not the standard can be attained.

Reasonable Further Progress

Pennsylvania has submitted a graphical demonstration that Reasonable Further Progress (RFP) will be accomplished. This demonstration for ozone shows that attainment by 1987 will occur, and shows reductions that are expected from stationary and mobile sources. Pennsylvania also has new source and offset requiements which will be adequate to keep VOC emissions growth within the RFP limitations and to maintain attainment of the NAAQS after 1987.

Pennsylvania's RFP graph showed ozone levels for 1980 and 1987 only, not the interim years. RFP is supposed to show the incremental reductions for each year from the base year to 1987. Although the RFP for the Pittsburgh area did not show the interim years, it was assumed that a linear reduction would occur, with equal reductions in each year.

The RFP claimed reduction from I/M, which is not being implemented. If I/M is disapproved, a reevaluation of the RFP will be required to ascertain whether or not attainment will be achieved.

Transportation Control Measures

The Southwestern Pennsylvania Regional Planning Commission (SPRPC) was responsible for developing the transportation portion of the 1982 SIP. SPRPC completed a detailed analysis of all reasonably available measures for improving air quality. From this analysis, four measures were selected for implementation: 1. expanded ridesharing program, 2. transit maintenance program, 3. traffic operations improvements, and 4. a bridge repair strategy. Any measures not selected were justified because of air quality impacts, economic impacts, or consideration of acceptability of projects. In addition, several measures proposed in the 1979 SIP were since rejected. These rejected measures were also justified. Emission reductions claimed from these measures are 3,350 tons of hydrocarbons per year. Although commitments were made by SPRPC to the measures included in the SIP, commitments from other State and local agencies involved were not submitted. Therefore, letters of commitment from these other agencies (the Port Authority Transit of Allegheny County and the Pennsylvania Department of Transportation) were requested and received. Therefore adequate commitments to these measures were received. SPRPC has indicated that Basic Transportation Needs are being provided in the area, and that the ongoing transit program will continue to provide for these needs.

As indicated above, the Southwestern Pennsylvania transportation portion of the Pennsylvania Ozone SIP meets EPA's basic criteria for an approvable SIP.

Stationary Sources

Requirements for the 1982 SIP's include Reasonably Available Control Technology (RACT) for (a) all sources of Volatile Organic Compounds (VOC) covered by a Control Techniques Guideline (CTG), and (b) all remaining major stationary sources with the potential to emit more than 100 tons of VOC per year. EPA requires that the submittal either include legally enforceable measures to implement RACT for these sources, or else document the State's determination that the existing level of control represents RACT for each of these sources.

a. CTG Regulations: Pennsylavania has adopted acceptable RACT VOC regulations for all categories of CTG sources except Perchlorcethylene Dry Cleaning. The State has also comiitted to adopt and implement RACT regulations for applicable VOC source categories after future EPA guidelines are published.

b. Regulations for 100 Ton Per Year Sources: the other requirement of stationary sources is control of all sources greater than 100 tons per year that are not covered by a CTG, or a certification that no such sources exist. For the five counties outside of Allegheny County, DER has certified that no such sources exist. For Allegheny County, this certification has not been included. EPA beleves that such sources do exist in Allegheny County. The County Bureau of Air Pollution Control has committed to develop a schedule for study, development, and implementation of RACT regulations for any such sources.

   Proposed Actions: EPA proposes to disapprove the stationary source control portion of the SIP because RACT regulations have not been included for all 100 ton per year VOC sources in Allegheny County. However, since the County is submitting a commitment with a schedule to develop RACT regulations if needed, EPA will not take final action on this until information is submitted by the County.

THE ALLENTOWN-BETHLEHEM-EASTON AREA

Pennsylvania's SIP provides for bringing Lehigh and Northampton Counties into attainment with the O_3 standard by 1987. Attainment will be achieved by substantially reducing volatile organic compound (VOC) emissions. The SIP contains a mix of stationary and mobile source strategies that are expected to bring about the necessary reductions. The SIP's main provisions are discussed below.

Demonstration of Attainment/Modeling

Pennsylvania's SIP includes a demonstration that the Lehigh/Northampton area will attain the O_3 standard by 1987. EPA has reviewed this demonstration and has found it acceptable. The demonstration consists of a determination of the 1987 emission level consistent with attainment and a showing that 1987 emissions will be below that level.
Pennsylvania used the EPA recommended Empirical Kinetic Modeling Approach (EKMA) to determine the emission level consistent with attainment. Using this model, Pennsylvania determined that the 1980 VOC emission level of 23,935 tons per year must be reduced by 27.5% to 17,353 tons per year to bring about attainment.

Reasonable Further Progress

Pennsylvania has submitted a graphical demonstration that reasonable further progress (RFP) will be accomplished. This demonstration shows that attainment by 1987 will occur, and shows reductions that are expected from stationary and mobile sources. Pennsylvania also has new source and offset requirements which will be adequate to remain within the RFP limitations and to maintain attainment of the NAAQS after 1987. In another section of this notice, disapproval of the I/M program is discussed. Any action on I/M may affect the RFP demonstration.

Transportation Control Measures

The Joint Planning Commission (JPC) of Lehigh and Northampton Counties was responsible for developing the transportation portion of the 1982 SIP. The JPC completed a detailed analysis of all reasonably available measures for improving air quality. The JPC chose transportation measures including traffic flow improvements, intersection improvements, corridor improvements, replacing all-way stop signs with a minimum number of signs, and permitting right turn on red for inclusion in its plan for reducing pollution from mobile sources. The JPC estimates the average annual reduction in VOC emissions due to the measures as 2.0 tons per year.

Proposed Actions

Based on the review discussed above, EPA proposed the disapproval* of the following portions of Pennsylvania's 1982 Ozone SIP:

1. The Public Hearing for the entire SIP
2. The Inspection/Maintenance Program (Statewide)
3. Portions of the Plan for the Southeastern Pennsylvania area, specifically:
   a. Demonstration of Attainment/Modeling
   b. Reasonable Further Progress
   c. Stationary Source Control Strategy
4. The stationary source portion of the plan for the Southwestern Pennsylvania area.

* There is an ongoing effort with Pennsylvania to remedy the deficienceis noted above. This could result in approval of portions of the SIP which are listed for disapproval in this document.

EPA is proposing the approval of the following portions of the Pennsylvania Ozone SIP:

1. Portions of the Plan for the Southeastern Pennsylvania area, including:

   a. Emission Inventory
   b. Transportation Control Strategy
   c. Additional Requirements

2. Portions of the Plan for the Southwestern Pennsylvania area including:

   a. Emissions Inventory
   b. Demonstration of Attainment/Modeling
   c. Reasonable Further Progress
   d. Transportation Control Strategy
   e. Additional Requirements

3. The entire ozone plan for the Allentown-Bethlehem-Easton area (except for I/M and the public hearing as mentioned above).

EPA is not planning to take action at this time on the Perchloroethylene Dry Cleaning regulations.

MARYLAND

Metropolitan Baltimore AQCR

(1) Modeling/Demonstration of Attainment

Maryland's process to develop control procedures was based on the revised ozone standard (0.12 ppm, with expected exceedances being less than or equal to one). Maryland used an alternative of the city-specific Empirical Kinetic Modeling Approach (EKMA) technique, allowed by EPA document EPA-450/4-80-27, Guidelines for Use of City-Specific EKMA in Preparing Ozone SIPs (Guidelines). This alternative procedure permits modeling based on a statistically-determined design day or set of meteorological classes or conditions.

(2) Site Day Selection

In order to determine the percentage in Reactive Volatile Organic Compounds (RVOC) emissions needed to meet the NAAQS for Ozone, the State used a peak ozone value determined to be the average value which occurred on the days described by a particular category. The State modeled each day with an exceedance of the ozone standard rather than each modeling site. The State selected the key day of July 17, 1980 where 0.183 ppm was recorded at Ft. Meade.

(3) Input Parameters to Model

(EKMA), which is the EPA recommended model, is a generally available model with modest data requirements that considers local meteorological influences and atmospheric chemistry in evaluating control requirements. Maryland, however, used a modification of the basic EPA approach.

The City-Specific EKMA model is a computer program created by EPA to simulate the production of ozone by the complex chemical reactions which take place between VOC and NO_x. The program solves a simultaneous chemical reaction equation based on factors which as emission patterns, meteorological patterns, and the VOC/NO_x concentration ratios for a given specific area. Maryland also used the Ozone Isopleth Plotting Package (OZIPP) which, when coupled with EKMA, enables the model to perform simulation for different combinations of non-methane hydrocarbons (NMHC) and NO_x concentrations. The ratio used by Maryland is 8.26:1.

The State of Maryland then developed a statistical methodology for the development of a number of "design days" on which to base its control estimates. The State used ten years of meteorological data to determine the occurrence of types of days on which meteorological conditions were most conducive to the formation of ozone. The State then compared the results using this method with those derived by the use of other EPA methods.

The parameters used in the EKMA methodology were dilution time, initial precursor concentrations, temporal emission factors, and mixing height. Of these parameters, the most sensitive factors were found to be the initial concentration levels of reactive volatile organic compounds (RVOC) and the range between initial and final mixing heights. The State then performed a regression analysis to compare initial RVOC concentration levels against wind speed conditions generated at the Baltimore-Washington International Airport. The analysis revealed a correlation coefficient of 0.65 and 0.68 for the regression equations.

The State also analyzed the effect of transport on peak ozone concentrations in Baltimore and determined that it could have a significant effect on the resulting concentrations. Following the EPA guideline procedures for determining background levels of ozone, the State considered a 0.05 ppm ozone level to be a representative background value for the AQCR.

Demonstration of Attainment

The Maryland SIP for Baltimore requires a VOC reduction from 319 tons per day in 1980 to 166 tons per day in 1987. The emission changes are to occur as follows:

Source	Emission Levels (Tons/Day)	
	1980	1987
Stationary Sources	125	62
Mobile Sources (including I/M)	136	45
Area Sources	58	59
	319	166

The State then performed a Level II analysis of EKMA, a more detailed analysis than what EPA requires. The State concluded that the Level II analysis more adequately represented the prevailing wind patters in Baltimore and the EPA-recommended straight line trajectory was not compatible with the gridded emissions inventory available for the region. The State explains that the emission densities are not uniform in the regions. Hence, Maryland employed the more sophisticated West wind field model. Maryland also used a solar radiation factor based upon Baltimore's latitude and longitude.

This model was run for a number of high ozone days during the ozone season. The results were used to compute emission fractions typical of the Metropolitan Baltimore AQCR between 8:00 a.m. and 4:00 p.m. LST (Local Standard Time).

Model Results

Using parameters such as mixing height ranges that were representative of peak ozone days, a 20% growth in NO_x emissions between 1980 and 1987, and a NMHC/NO_x ratio of 8.26 to 1, the State determined that a 48% reduction in VOC emission is needed to attain the NAAQS for Ozone by 1987. The State had looked at data collected between 1978 and 1980. This result agrees closely with a control requirement of 49% derived when only one year (1980) was modeled and the second highest control requirement was determined.

EPA considers Maryland's modeling analysis to be adequate, since the results validate favorably with EPA's recommended modeling protocol. While every segment of Maryland's procedure does not necessarily agree with the EPA guidelines, the Agency accepts Maryland's approach.

The State then determined that the 319 tons per day, assuming normal growth patterns, would increase to 345 tons per day without any controls designed to curtail emissions. The State then listed the control strategies that would reduce VOC emission to the 166 tons/day target level by 1987:

Control Strategy	Potential Reduction
1. Federal Motor Vehicle Control Program (FMVCP)	99 tons/day
2. Inspection and Maintenace (I/M) Program	14 tons/day
3. Transportation Control Plan (TCP)	3 tons/day
4. Stationary Source Control Measures	63 tons/day
	179 tons/day

The State estimates that its currently-adopted stationary source control regulation accounts for 54 tons/day. Therefore, the State determined that it will be required to adopt additional stationary source control measures designed to reduce VOC emissions by an additional 9 tons/day.

Reasonable Further Progress (RFP)

Maryland's 1982 SIP indicates that a 48% reduction of 1980 VOC levels will be needed to attain the Federal Ozone Standard by 1987. This projection includes an allowance for growth in several categories: 1) growth based on projected estimates for future employment, housing and population in the region to be used for planning purposes; 2) future aircraft activity; and 3) completion of a major new power plant (BG&E - Brandon Shores) in Anne Arundel County. The projected inventories do not reflect any other growth in either new or existing industrial sources. However, the currently-approved Maryland SIP contains a new source review regulation which contains an offset provision for any new source to be constructed in a nonattainment area.

The State's RFP tracking process for VOC will consist of annual reports to EPA (required by the Clean Air Act) and updated emissions inventory reports for stationary and area sources. The Regional Planning Council (RPC), in conjunction with the State, will track the RFP for mobile sources. The mobile source reductions assume a July 1, 1983 date for implementing the mandatory I/M program.

Stationary Source Control Measures

The State of Maryland has determined that stationary source control measures will contribute 63 tons/day of the overall emission reductions needed to attain the O_3 standard by December 31, 1987. The State estimates that Round I and Round II CTG regulations that are included in the approved SIP as well as the State's Photochemically Reactive Organic Solvents (PROS) and Photochemically Reactive Organic Materials (PROM) regulations will account for emissions reductions of 54 tons/day by 1987. Therefore, the State will be required to develop, adopt, and submit additional stationary source control. The Clean Air Act requires States to adopt regulations requiring Reasonably Available Control technology (RACT). Therfore, as part of the 1982 submittal, States must include RACT for: (a) all sources of VOC's covered by a Control Technqiues Guideline (CTG) published by EPA and (b) all remaining major stationary sources with the potential to emit more than 100 tons of VOC per year.

Current EPA policy issued August 11, 1982, allows the State to submit schedules in lieu of adopted regulations as long as the schedules call for adoption and implementation dates for the necessary control measures within a time frame so as not to impede reasonable further progress towards attainment.

The Maryland SIP contains no new adopted regulations designed to make up the nine ton/day shortfall by 1987. However, the State has submitted a schedule by which it will develop the regulations.

Transportation Measures

The RPC Plan consists of the following nine measures:

(1) Ridesharing - This measure consists of carpooling and vanpooling.

(2) Park and Ride/Park and Pool Lots - This measure consists of providing parking spaces for commuters who transfer to public transit or carpools.

(3) Bus and Rail Transportation - RPC's analysis shows that ridership on the Baltimore Mass Transit Administration (MTA) has increased over the past few years, and with the opening of the METRO in 1983, will continue to increase between 1982 and 1987.

(4) Traffic Flow Improvements - These improvements include, but are not limited to, traffic signal and intersection modifications, parking changes, and road and maintenance repairs.

(5) Employer-Based Programs - These programs include actions taken at the employment site that encourage employees to rideshare, use transit, or take other non-auto forms of commuting.

(6) Parking Management - Parking Management encompasses a range of actions that alter the price, number or location of parking spaces.

Inspection and Maintenance (I/M)

All major urban areas that needed an extension beyond 1982 to attain a standard for O_3 or CO were required to include vehicle I/M as a portion of the 1979 SIP revision. EPA evaluated and acted on the I/M portion of the Maryland 1979 revision on August 12, 1980.

The State has submitted the following elements to satisfy requirements for the 1982 SIP revision.

a. Public awareness plan
b. Mechanics training plan
c. Proposed emissions standards showing emission reductions based on a program beginning in 1984.

The State has not submitted the remaining elements of an I/M program to satisfy requirements for the 1982 SIP revision:

1. Inspection Test Procedures
2. Inspection Station Licensing Requirements
3. Emission Analyzer Specifications
4. Recordkeeping and Records Submittal Requirements
5. Quality Control Audit and Surveillance Procedures
6. RACT Compliance

Therefore, EPA is proposing disapproval of the State's I/M program since the SIP contains no valid schedule and since the SIP contains no information on most of the elements of the I/M program. Also, current EPA policy, as published on January 22, 1981, does not permit a State to begin the mandatory phase of any centralized I/M program after January 1, 1983, even if emission standards are developed that are stringent enough to produce the same emission reduction in less time.

DISTRICT OF COLUMBIA (MARYLAND PORTION)

Demonstration of Attainment/Modeling

EPA has recommended and COG has used the city-specific Empirical Kinetic Modeling Approach (EKMA) for evaluating achievement of the Ozone Standard.

The five days with the highest Ozone concentration within the past three years at each Ozone monitor site in the region were considered for modeling.

Isopleth diagrams were created for each Ozone exceedance day as determined from analysis of regional monitored data, and, for each Ozone exceedance, an emission reduction requirement was calculated based upon the isopleth diagram. After analysis of all isopleth diagrams, it was determined, based on a 0.16 ppm Ozone value recorded at the Takoma Park monitoring site in Washington, D.C. on July 16, 1980, that a VOC reduction of 46% from 1980 levels would achieve attainment of the 0.12 ppm Ozone Standard. This translates into a VOC reduction of 157 tons/day from the 1980 total (342 tons). Since present estimates indicate that the region will reduce VOC emissions by 118 tons/day by 1987 (from 342 to 224 tons), an additional reduction of 39 tons/day is required to attain the current standard.

This 39 TPD reduction is a regional figure and the entities involved agreed to equitably distribute a tons per day reduction target to each entity, namely, Virginia, Maryland, and the District of Columbia. Because each State's proportional contribution to the 1980 and 1987 inventories was slightly different (due mostly to differential population growth), the COG committees adopted a format setting ranges of emission reductions by State. These VOC reductions were: Maryland, 14 TPD, D.C., 10 TPD, and Virginia, 16 TPD.

The Maryland plan clearly demonstrates a 7.5 TPD reduction and contains a commitment to study and evaluate a mix of additional control measures, including Stage II Vapor Recovery, in order to achieve an additional 6.5 TPD reduction. This study will be completed by July 1, 1983.

Reasonable Further Progress

Maryland has submitted an adequate Reasonable Further Progress (RFP) presentation and discussion in their SIP. Although the RFP curve does not demonstrate attainment of the Ozone Standard by December 31, 1987, i.e., a 6.5 tons per day shortfall, Maryland has committed to study and implement additional control measures in order to eliminate this shortfall and attain the standard by December 31, 1987. Maryland has also certified that its existing new source review and offset requirements will be adequate to allow growth while remaining within the RFP limitation and to maintain attainment of the Ozone Standard after 1987. However, the Marylnd RFP schedule, and EPA's proposed action of same, assumes implementation of the State's inspection and maintenance (I/M) program by July 1, 1983. Should Maryland delay its implementation of the I/M program, it will be required to submit to EPA a revised RFP schedule.

Transportation Control Measures (TCMs)

In developing a regional transportation control plan as part of the overall control strategy, COG examined the feasibility of applying the 18 categories of measures listed in Section 108(f) of the Act and considered to be "reasonably available." COG considered fifteen of these 18 categories to be feasible for implementation in the National Capital AQCR. The COG then considered 50 specific measures derived from these categories for inclusion into the SIP. The State of Maryland has participated in analyzing the relative effectiveness of these control measures. The State, in conjunction with the District of Columbia, Virginia, and COG, analyzed the benefits (regional emission reductions in tons per day, total energy savings in gallons per weekday, and additional benefits which encompass other than air quality goals). The State also analyzed the costs (capital, operating, maintenance, other) associated with each prospective measure.

As a result of this analysis, COG has developed for inclusion in the Maryland SIP the following transportation control measures that are designed to reduce VOC emissions in the Maryland portion of the National Capital AQCR:

1. METRO
2. Parking Restrictions in District of Columbia CBC
3. Bicycle Improvements
4. Transportation System Management Improvements
5. Ridesharing Improvements

These measures, when fully implemented, are designed to reduce VOC emissions in Maryland by 7.5 tons/day.

The COG transportation plan also identifies a recent study conducted by the Urban Mass Transit Administration and Washington Metropolitan Area Transit Authority (WMATA) that addresses basic transportation needs. Since the completion of this study, WMATA and the local and State jurisdictions have been implementing programs to expand and improve public transportation.

Inspection and Maintenance (I/M)

According to the currently approved Maryland SIP, the State is to begin implementation of its inspection and maintenance (I/M) program by January 1, 1983. However, the State's 1982 SIP contains a statement that the currently-approved I/M schedule is invalid, and that the I/M start-up date is to be no earlier than 1984. No new schedule was submitted with this SIP revision to replace the current schedule.

EPA is proposing disapproval of the State's I/M program since the SIP contains no valid schedule and since the SIP contains no information on most of the elements of the I/M program. Also, current EPA policy, as published on January 22, 1981, does not permit a State to begin the mandatory phase of any centralized I/M program after January 1, 1983, even if emission standards are developed that are stringent enough to produce the same emissions reduction in less time.

VIRGINIA PORTION OF THE NATIONAL CAPITAL AIR QUALITY CONTROL REGION

Demonstration of Attainment/Modeling

EPA has recommended and COG has used the city-specific Empirical Kinetic Modeling Approach (EKMA) for evaluating achievement of the Ozone Standard.

Isopleth diagrams were created for each Ozone exceedance day as determined from analysis of regional monitored data, and, for each Ozone exceedance, an emission reduction requirement was calculated based upon the isopleth diagram. After analysis of all isopleth diagrams, it was determined, based on a 0.16 ppm Ozone value recorded at the Takoma Park monitoring site in Washington, D.C. on July 16, 1980, that a VOC reduction of 46% from 1980 levels would achieve attainment of the 0.12 ppm Ozone Standard. Table 1 summarizes the input data used by COG in the EKMA analysis. This translates into a VOC reduction of 156 tons/day from the 1980 total (339 tons). Since present estimates indicate that the region will reduce VOC emissions by 118 tons/day by 1987 (from 339 to 221 tons), an additional reduction of 38 tons/day is required to attain the current standard.

This 38 TPD reduction is a regional figure and the entities involved agreed to equitably distribute a tons per day reduction target to each entity, namely, Virginia, Maryland, and the District of Columbia. Because each State's proportional contribution to the 1980 and 1987 inventories was slightly different (due mostly to differential population growth), the COG committees adopted a format setting ranges of emission reductions by State. These VOC reductions were: Maryland, 14 TPD, D.C., 10 TPD, and Virginia, 16 TPD.

The Virginia plan clearly demonstrates an 8.9 TPD reduction and contains a commitment to study and evaluate a mix of additional control measures, including Stage II Vapor Recovery, in order to achieve an additional 6.1 TPD reduction. This study will be completed by July 1, 1985.

Reasonable Further Progress

Virginia has submitted an adequate Reasonable Further Progress (RFP) presentation and discussion in their SIP. Although the RFP curve does not demonstrate attainment of the Ozone Standard by December 31, 1987, i.e., a 6.1 tons per day shortfall, Virginia has committed to study and implement additional control measures in order to eliminate this shortfall and attain the standard by December 31, 1987. Virginia has also certified that its existing new source review and offset requirements will be adequate to allow growth while remaining within the RFP limitation and to maintain attainment of the Ozone Standard after 1987.

The SIP revision submitted by Virginia contains a schedule under which the Commonwealth will evaluate a mix of additional control measures and implement regulations in order to achieve the 6.1 tons per day shortfall. According to this schedule, Virginia will complete the analysis of measures by July 1, 1985. Regulations, required to achieve the 6.1 tons per day reduction, will be developed and promulgated by July 1, 1986. These additional regulations will be designed to have full effect in time to ensure attainment of the Ozone Standard by the 1987 deadline. EPA believes this schedule is as expeditious as practicable and that reasonable further progress toward attainment will be maintained.

Inspection and Maintenance (I/M)

On July 13, 1981, the Commonwealth submitted the I/M Administrative and Procedural Regulations and on August 10, 1981, the Commonwealth submitted the Mobile Source Emission Standard. These SIP revisions were reviewed and approved by EPA on April 6, 1982. Although the Commonwealth has had a viable, effective I/M program functioning since December 1981, certain elements of the I/M program were not included in the previous submittals. These elements are:

a. Under Recordkeeping and Record Submittal Requirements: Adequate description of the inspection data that will be collected and reported to EPA.

b. Under Quality Control, Audit & Surveillance Requirements: Description of procedures to be followed by the State in conducting unannounced unscheduled audits.

c. Submittal of a Pubic Awareness Plan.

These elements have now been submitted by the Commonwealth as part of the SIP submittal for parallel processing by EPA. EPA has reviewed this material and finds it satisfies EPA's requirements for an acceptable I/M program.

As EPA stated in its earlier rulemaking approving Virginia's I/M program, we preliminarily determined that the program provides for the 35% reduction of 1987 emissions as well as a 20% failure rate, however, Virginia must submit a complete analysis of its I/M program. This analysis must be submitted after one full year's operation of the program, using Virginia-specific data and 1980 census information. This analysis must be submitted in order for EPA to finalize its determination of the overall effectivens of Virginia's I/M program.

SURFACE WATER POLLUTION BY ACID MINE DRAINAGE

1. Description of Problem

- Sources: Active and abandoned deep and surface coal mines. However it is estimated that at least 75% of the problem originates from abandoned mines.
- Impaired Uses: Aquatic life, industrial, domestic water supply.
- Method of Impairment: Abnormal pH and iron levels can be lethal to fish, eliminate aquatic communities, and severely limit domestic and industrial water use. Sediment eliminates the food sources and destroys reproductive habitat of fish.
- Regional Significance: By far the most devastating Regional problem in terms of miles of impaired uses. 49% of impaired streams in Region are due to mining (over 3000 miles).
- Trends: While more stringent effluent requirements (BPT & BAT) have improved the quality of discharges from active mines, mine drainage from abandoned mines has proven much more difficult to control. In particular, there is increasing evidence that despite the use of State-of-the-art technology for reclamation, acid mine drainage will eventually develop in sulfur bearing areas. In-stream dredging of coal fines constitutes an emerging problem.
- Affected Priority Water Bodies: Cheat River (WV), Mahanoy Creek (PA)*.
- Documentation: Problem has been thoroughly studied for the last 15 years.
- Treatability: For abandoned deep mines, control of drainage has been difficult (see 'Barriers to Solutions' below).

2. Barriers to Solutions

- Lack of Technology: Mine sealing and mine flooding of abandoned deep mines have met with minimal success to date. In addition, reclamation of surface mines has sometimes proven to be only temporarily effective in the control of mine drainage problems.
- Lack of Funding: Surface Mine Control and Reclamation Act provides for some monies however, mitigation of water quality impacts receive relatively low priority in this program.
- Legal: Legal responsibility for clean-up of abandoned mine discharges has often been difficult to establish. In addition, there currently are no regulations to control in-stream dredging activities.

---

* Low pH levels are responsible for corrosion of public water supply system, resulting in exceedance of Maximum Contaminant Levels for lead in drinking

3. Existing Programs:

There are various federal/state programs which attempt to minimize the environmental problems related to coal mine drainage. These programs include:

- NPDES: The NPDES program regulates the quality of discharge waters emanating from active mines. Existing mines are required to achieve Best Practicable Treatment (BPT), which appears to be adequate for the protection of water uses in most cases. New mining operations must meet new source effluent standards which are slightly more stringent than BPT. Prior to EPA issuance of new source NPDES permits, overall assessments of environmental consequences must also be performed in accordance with the National Environmental Policy Act (NEPA). However, all States in Region III have been delegated NPDES authority and are not required to provide NEPA reviews prior to permit issuances. It is uncertain how environmental conditions are considered by the State in determining NPDES permit conditions. Therefore, Region III is presently developing a strategy for oversight of NPDES permits for mining. Part of this effort should include an assessment of existing State procedures in issuing new source mining permits.

- Surface Mine Control and Reclamation Act (PL95-87) (Title V only): Title V of the Surface Mine Control and Reclamation Act (SMCRA) requires pre-mine planning to be conducted, subject to approval by OSM or the designated state authority. The plan sets forth the coal mining and site reclamation plans of the operator. In review of this plan, environmental considerations are critical for approval. Operators are required to be bonded so that reclamation of the site after mining is ensured. Section 522 of Title V also allows for the designation of areas which are unsuitable for coal mining.

  It is uncertain that Title V is adequate in assuring that water quality considerations are properly addressed for both new source mining operations and future closures of existing mines. Therefore, an assessment of existing OSM/State procedures in this regard should be conducted to ensure that water quality considerations are properly addressed. This should be accomplished through the development of the Regional mining strategy.

- Surface Mine Control and Reclamation Act (Title IV only): Title IV of The SMCRA provides for reclamation of abandoned mine lands. However, the SMCRA and pursuant regulations place a low priority on water quality problems. That is, Section 403 of the SMCRA places the priorities for funding as:

(1) the protection of public health, safety, general welfare, and property from extreme danger of adverse effects of coal mining practices;
(2) the protection of public health, safety, and general welfare from adverse effects of coal mining operations;
(3) the restoration of land and water resources and the environment previously degraded by adverse effects of coal mining practices including measures for the conservation and development of soil, water (excluding channelization), woodland, fish and wildlife, recreation resources, and agricultural productivity;
(4) .....
(5) .....
(6) .....

Based on the above, the Office of Surface Mining has required that all priority 1 and 2 problems be abated before priority 3 problems are considered unless clean-up of a priority 3 problem is coincidental with clean-up of a priority 1 or 2 problem. Mining related water quality problems rarely threaten public health, safety, and general welfare. Therefore, water quality problems are generally considered priority 3.

Due to the relatively long history of coal mining east of the Mississippi as compared to the western States, a large majority of the abandoned mine sites reside in the eastern States. Nationally, it is estimated that a total of $3 billion will be collected throughout the regulatory life of the SMCRA. However, it is estimated that nationally $30 billion may be needed to reclaim all abandoned mine problems for priorities 1 through 6. Furthermore it is estimated that $12 billion is needed to reclaim all abandoned mine lands in PA alone. Surely the SMCRA will not provide adequate funding to reclaim all abandoned mine lands, particularly in the east. At this time the cost for priority 1 through 3 problems is not known, however, it is projected that few reclamation grants will be awarded under SMCRA to abate water pollution in the States of Virginia, Pennsylvania, and West Virginia. That is, generally only priority 1 and 2 projects are anticipated to be funded in these States.

It is significant to note that, although existing OSM Policy will not allow funding of many priority 3 mines related problems, a legal opinion provided by E.H. Bonekemper, III (D.O.I. Assistant Solicitor) suggests that priority 3's may be funded as long as the overall funding picture is compatible with the SMCRA. Therefore, EPA should work to assure that this flexibility allowed by SMCRA is exercised in OSM Policy.

State funded mine reclamation projects which are targeted towards improved water quality exist in the Region. However, these programs historically have been severely underfunded. Therefore, it appears that, if the abandoned mine drainage problems in Region III are to be abated, some modifications in OSM Policy will be required.

4. Management Recommendation:

- States:

  1. Identify stream segments which may be particularly sensitive to new source coal mining similar to the mining areawide assessments developed in West Virginia. Take special precautions in mine planning to minimize impacts on these streams. In some cases it may be necessary to deny a new source mining permit. Also, implement Region III mining strategy. (target date: FY 84, Responsible party: PA DER, Bureau of Water Quality, WV Division of Water Resources, and Va. State Water Control Board, MD Office of Environmental Programs).

  2. In the next revision to the State 305(b) report, special consideration should be given towards highlighting the extent of the water quality problems relating to mine drainage. The 'visibility' afforded by this effort could be instrumental in achieving progress in developing programs to abate this difficult and costly water pollution problem.

- EPA Region III:

  1. Obtain agreement with pertinent States in the FY 84 SEA to identify sensitive streams as described above. (Target date: 9/83, Responsible Party: State Branches, Water Division).

  2. Finalize Strategy for NPDES mine permitting. (Target date: 6/83, Responsible Party: Permits Branch, Water Division).

  3. Obtain agreement with pertinent States in FY 84 SEA to implement NPDES mine permit strategy. (Target date: 9/83, Responsible Party: State Branches, Water Division).

  4. Implement NPDES mine permit strategy. (Target date: FY 84, Responsible Party: Permits Branch, Water Division).

- EPA HQ:

  1. Establish a national work group to assess regulatory difficulties of abandoned mine reclamation for control of water pollution and make recommendations. (Target date: Initiate in FY 83).

     Activities for this work group are:
     - Provide recommendations for research on developing technology to reduce drainage from abandoned surface mines, particular research on overburden analyses and handling.

- Finalize an interagency agreement between EPA and OSM on implementation of the Surface Mine control and Reclamation Act.
- Develop guidelines or regulations to address in stream dredging of coal mines.
- Consider recommendations for modification of the SMCRA so that water quality considerations may be adequately addressed.
- Consider methods to provide for bonding of mine operators to ensure perpetual care of mine closures.

5. Anticipated Results

The benefits anticipated in implementing the management alternatives are threefold: 1) prevent further surface water degradation from future mining operations utilizing existing laws and procedures, 2) fully document and highlight the extent of mine drainage related water quality problems and 3) develop technological, regulatory and financial means of correcting water quality problems from existing abandoned mines.

NON-POINT SOURCE POLLUTION BY NUTRIENTS AND SEDIMENTS FROM AGRICULTURE

1. Description of Problem

- Source: Non-point source runoff of animal waste, fertilizer and sediment from farmland activities, including cropland, pastureland, and feedlots. Primary pollutants of concern are various forms of nitrogen, phosphorus and sediment.

- Impaired Uses: Aquatic life, domestic water supply, recreation, aesthetics.

- Method of Impairment: Nitrogen and phosphorus promote excessive growths of algae, particularly in lakes and estuarine systems. Algae can cause large drops in dissolved oxygen (through respiration) which can be lethal to fish, impart an offensive taste and odor to domestic water supplies, impair boating and swimming and create aesthetically offensive conditions. Algae have also been linked to infections in humans through water contact recreation causing gastrointestinal, respiratory and dermatalogical symptoms. Sediments, in addition to transporting nutrients from farmland, reduce reservoir capacities, degrade aquatic communities and increase water treatment costs. Specific use impairments of the Chesapeake Bay that may be linked to high nutrient levels are declines in 1) fresh water spawning fish populations, 2) oyster spats and 3) submerged aquatic vegetation (SAV).

- Regional Significance: Often both agricultural non-point source and municipal point source nutrient loadings contribute to this problem, which accounts for 14% of the impaired stream miles (over 1000) and almost all of the impaired lakes and reservoirs in the Region (100 identified at this time). Data on streams impacted solely from sedimentation in Region III is incomplete.

- Trends: Regionally, nutrient loadings from agricultural runoff have gone generally uncontrolled. With the discontinuation of the 208 and Clean Lakes programs, little improvement in this problem is anticipated.

- Regional Priority Waterbodies: Upper Chesapeake Bay (MD), Lake Chesdin (VA), Pymatuning Reservoir (PA) and Loch Raven Reservoir (MD).

- Documentation: For priority waterbodies, sources and effects of nutrients have been well documented. However, in most cases, precise determinations of nutrient cause/effect relationships are still needed. Sedimentation problems are currently documented for only Pennsylvania and Maryland.

- Treatability: Technologically, several practices have been demonstrated to be effective in substantially reducing sediment/nutrient loads carried by agricultural runoff. However, implementation of these practices has been minimal.

TABLE 1 - Non-ACP Implementation Funding

Area	Use Impacts	NPS Loads	Source	Amount	Federal Funding Necessary
Lock Raven Reservoir, MD	. domestic water supply . recreation . aquatic life	. 34.3% of total P NPS loads are from controllable agricultural sources (P is limiting nutrinet)	Clean Lakes Program	approx. $ 760,000	$3,000,000 (assuming 50% match) to address critical problems only. ($9,000,000 to address all identified needs)
South Rivanna Reservoir, VA	. domestic water supply . aquatic life	. 98.9% N . 91% P	Clean Lakes Program	approx. $ 400,000	$1,200,000 (assuming 50% match
Chowan River, VA	. commercial fishing . swimming . recreation	. 32.5% P and 47.6% N from agriculture	Section 208 Program[1]	$ 13,000	Currently under study.
Conestoga River Basin,	. domestic water supply . swimming . aquatic life	. currently under study	RCWP	$1,448,000	
Appoquinimink, DE	. aquatic life . recreation	. 100% N . 80% P	RCWP	$ 719,200	
Double Pipe Creek, MD	. domestic water supply	. currently under study	RCWP	$2,892,478	
Nansemond-Chuckatuck Basin, VA	. shellfishing . sport fishing . swimming . recreation . domestic water supply . aquatic life	. currently under study	RCWP	$1,476,000	

---

[1] Funded as a pilot demonstration project.

2. Barriers to Solutions

. Lack of Incentives: Agricultural runoff controls (Best Management Practice) are applied on a voluntary basis and require substantial financial investment by the farmer. To date, farmers generally have not been convinced that this investment is in their best financial interest. The more expensive BMPs (such as animal waste systems) are usually implemented only when either Federal or State cost sharing programs are available.

3. Existing Programs

Federal cost-share programs have provided the majority of BMP implemtation monies to date (approximately 75% federal, 25% landowner). BMP's may be divided into the following categories:

1. Fertilizer management
2. Tillage practices
3. Non-structural runoff controls
4. Structural runoff controls
5. Animal waste management

The high cost of some structural runoff controls and animal waste facilities limits their use to those areas where impacts are critical. Non-structural practices are less costly but yield benefits primarily where implemented on a large scale. Unfortunately, there are hidden costs associated with some BMPs. For instance, conservation tillage practices are usually accompanied by increased herbicide use, while runoff controls increase the infiltration of nutrients and herbicides into groundwater. On the other hand, many practices have direct economic benefits to farmers in that conservation of topsoil and reductions in commerical fertilizer useage save money in the long run.

It is generally acknowledged that federal cost-sharing is the major incentive for a farmer to invest in controls, and that without future cost-sharing, BMP implementation would be minimal. Federal funds for this purpose have come from the following: Rural Clean Water Program (USDA), Clean Lakes Program (EPA), Section 208 Program (EPA) and Agricultural Conservation Program (USDA). In the former three cases, all projects have been accompanied by water quality planning and monitoring to assess the cost-effectiveness of BMPs. Projects funded through these programs in Region III are summarized in Table 1.

Several projects in the Region have received monies through the Clean Lakes Program for water quality assessments and development of pollution abatement plans, but have received no implementation monies to date. These projects include Lake Chesdin, VA and Lake Wallenpaupak, PA. As noted in Table 1, some implementation monies have been granted to Loch Raven Reservoir, MD, South Rivanna Reservoir, VA and Chowan River, VA, but substantial additional funds will be necessary according to plan recommendations. Pymatuning Reservoir, PA has been identified as a priority waterbody which has yet to develop a pollution abatement plan.

The Chesapeake Bay Program has been developing recommendations for control of non-point sources which may be responsible for aquatic life impacts in the Upper Bay. Though the exact cause of many specific effects have not been identified, excessive nitrogen and phosphorus levels have been implicated as contributing to the problem. During an average rainfall year, the Susquehanna River contributes 77 percent and 43 percent of nitrogen and phosphorus loads respectively to the Upper Bay, while during wet years, total loads are doubled. As a result, control of non-point sources in the Susquehanna basin, particularly agricultural runoff, will be necessary to affect necessary improvements in water quality of the Upper Bay. This shall entail utilization of some combination of the BMPs identified. The Chesapeake Bay Program is currently developing control options. One option is 100% implementation of conservation tillage (low cost) supplemented with other structural/non-structural BMPs. It is evident that, given past precedent, cost-share funds will be necessary for implementation of structural BMPs in critical areas. The State of Maryland has instituted a cost-share program of its own to provide funds, but federal monies may be required to significantly reduce NPS nutrient loads, particularly in Pennsylvania. One major implementation project is already underway in the Conestoga Creek Basin of Lancaster County, PA (see Table 4).

Most of the Federal resources for implementation are administered by the U.S. Department of Agriculture, which has several national programs that provide educational, technical and cost-sharing assistance to agricultural operators and land owners. Some of the programs are in part directed toward reducing agricultural runoff through soil conservation, fertilizer application recommendations and animal waste management. The Agricultural Conservation Program (ACP) administrated by the Agricultural Stabilization and Conversation Service (ASCS) is the principal program that provides cost-sharing to farmers for application of conservation practices. This program received $150M nationwide in Fiscal Year 1983. Some special projects with primarily a water quality or soil erosion improvement focus are being funded under the ACP program, but most of the cost-sharing resources are spread across the counties in each State. In Region III, the FY'83 ACP resources were distributed as follows:

State	ACP Resources		
	State Total	Special Water Quality	Special Critical Erosion Control
	$Millions		
PA	3.85	$ 52,000	$250,000
MD	0.87	54,000	None
DE	0.32	None	116,000
WV	1.25	11,000	None
VA	2.63	153,000	150,000
Totals	$8.92	$270,000	$516,000

4. Management Recommendations:

The process of developing an implementation program has several required elements which are summarized below:

- Water Quality Problem Identification and Evaluation: The planning process should define the specific water quality problems including water use impacts, sources of pollutants and target pollutant reductions needed to meet the water quality goals. The results of these evaluations should be documented in a water quality management plan.

- Development of Non-Point Source Project Work Plan: The work plan establishes what measures must be taken to reach the goals identified in the water quality management plan, who will do it, and how much it will cost. The work plan must clearly identify all tasks, assign roles and responsibilities, and establish schedules and milestones. The plan must describe the various structural and management practices that are recommended for implementation and the critical areas of application. Financial arrangements for Federal or State cost-sharing must also be included.

- Establishment of Institutional Arrangements: Experience has demonstrated that the most successful approach involves a voluntary theme as long as the basic laws and regulations are in place to handle flagrant violators. Through aggressive local education and with some cost-share incentives, the voluntary approach generally has been successful in achieving 70 to 80 percent compliance with specific goals. Another basic requirement is the assignment of overall management responsibility with one agency that has the appropriate authority to carry out those functions.

- Public Participation: This element is the most important ingredient of a successful program. Involving the affected agricultural community, interest groups, and state and federal agency representatives during all phases of planning will create a much clearer atmosphere for eventual implementation.

The following activities represent positive actions that could be taken to develop these elements for remaining agricultural runoff problems in Region III. Additional resources and positions must be made available to support these activities.

- States:
    1. Continue to identify priority watersheds where agricultural runoff significantly impairs water uses.
    2. Establish, with the appropriate 208 and county agencies, an educational program, (primarily for farmers in the priority areas) which emphasizes the cost-effectiveness of BMP implementation.
    3. Pursue State and Federal funding for cost-sharing of BMPs for priority watersheds.
    4. Identify and protect priority wetland systems which act to buffer non-point source pollutants.
- EPA Region III: Re-establish a focus on agricultural runoff control programs by:
    1. Encouraging and coordinating proposed state and EPA HQ activities (including 205(j) program).
    2. Providing for more active management of and involvement in the ongoing NPS projects (208, RCWP, Clean Lakes).
    3. Developing a Regional strategy for control of agricultural runoff.
    4. Establishing a network of NPS constituencies (local, state, federal) and fostering greater recognition of NPS control needs through periodic contacts and information transfer.
    5. Coordinating regional agricultural program with other relevant program initiatives, e.g., groundwater pollution control programs.
    6. Work with States to develop a NPS management plan for the Chesapeake Bay, building on Bay Program outputs.
- EPA - HQ:
    1. Re-emphasize agricultural runoff as a priority problem and apply appropriate resources. Place particular emphasis on programs which address NPS controls for specific watersheds on a priority basis (i.e., Clean Lakes, RCWP).

2. Pursue increased funding of BMP cost-sharing programs of Federal agencies, e.g., ASCS.

3. Re-emphasize wetlands protection as an important element in nonpoint source control.

5. Anticipated Results

The benefits to be expected from there recommendation include: 1) an accelerated development of agricultural runoff controls in priority areas of the Chesapeake Bay basin, including watersheds in Pennsylvania, 2) implementation of BMP's in watersheds where runoff is responsible for increased water treatment costs and accelerated decrease in reservoir capacities, 3) cost savings for farmers in the form of decreased top-soil erosion and less commercial fertilizer useage.

THE DEVELOPMENT OF A REGIONAL GROUND WATER DATA BASE

Detailed Analysis of Problem

Because of the lack of a detailed ground water data base, a strategy is needed for its development. The following outlines the basic tasks for developing a ground water data base as well as an estimation of the time required to perform each task:

1. Define and locate major aquifers in each State that are currently being used as a public water supply source, or have the potential as a water supply source. Some of this information gathered would consist of aquifer recharge area maps, hydrogeologic reports, and well records.

   Time frame: 3 months

2. Perform a hydrogeologic assessment of the major aquifers to determine if they are protected from potential pollution by impervious overburden or strata.

   Time frame: 1 month

3. Using the above aquifer recharge maps and information, hazardous waste sites will be located (via overlay) to determine potential pollution problems of aquifers.

   Time frame: 1 month, concurrent with Task 2

4. Identify priority areas and develop monitoring plans to gather supporting data.

   Time frame: 1 month

5. For suspected contaminated aquifers, extend the monitoring analysis to surface waters that are ground water fed to determine: 1) the extent of pollution and 2) to determine if the surface waters are impacted by aquifer contamination.

   Time frame: 1 month

6. Meet with States to discuss gathering information.

   Time frame: Continuous

   Total time required: 6 months

The information will be obtained through existing library references, State and Federal data base searches, and to a larger extent, meetings, with the various State and other Federal agencies involved with the aspects of ground water,(e.g., Virginia State Water Control Board, U. S. Geological Survey). Reference is made to Figure 1 for a flow chart of the tasks proposed, and to Table 1 for a summary of tasks, estimated costs and funding sources, time frame and responsible agency.

Figure 1

FLOW CHART OF TASKS

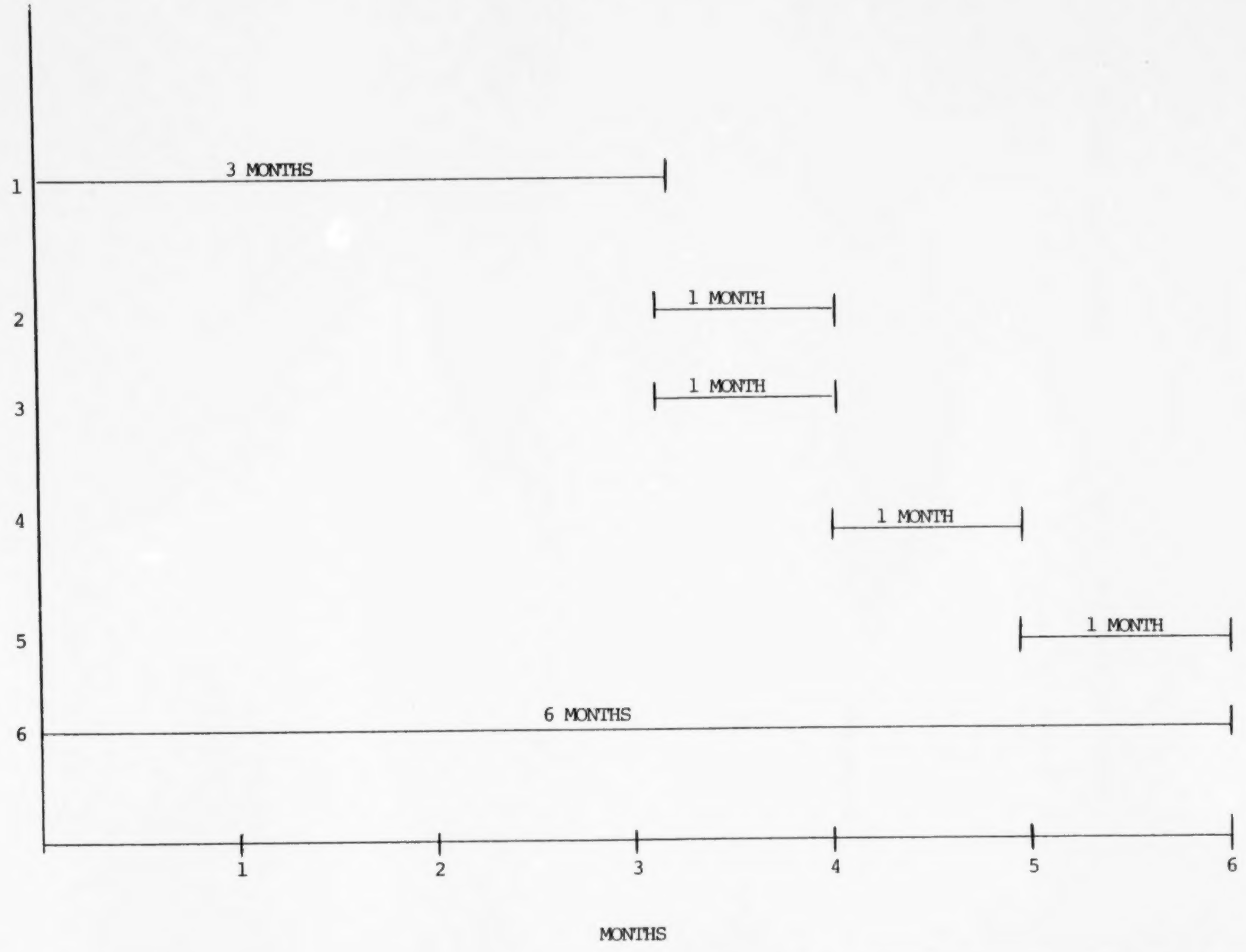


Table 1

Estimated Cost/Possible Funding Source	Time Frame	Responsible Agency
$25,000 (UIC, Superfund,	3	(EPA, States,
5,000 (Public Water Supply)	1	(Consultant)
5,000 "	1	"
6,500 "	1	"
6,500 "	1	"
2,000 "	Continuous	"

1 - $50,000